G5404B
Microplate Labeler

User Guide

Original Instructions

∴∴∴ **Agilent Technologies**

Notices

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Preface

This guide describes how to use the G5404B Microplate Labeler to print and apply labels automatically to your labware. The Microplate Labeler can print linear and two-dimensional barcodes and human-readable text fields.

This preface contains the following topics:

- "About this guide" on page viii
- "Accessing Automation Solutions user guides" on page x

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About this guide

Who should read this guide

This user guide is for people with the following job roles:

Job role	Responsibilities
Installer	Unpacks, installs, and tests the Microplate Labeler before it is used.
Integrator	Configures hardware and writes software.
Lab manager, administrator, or technician	• Manages the automation system that contains the Microplate Labeler • Develops the applications that are run on the system • Develops training materials and standard operating procedures for operators
Operator	Performs the daily production work on the Microplate Labeler and solves routine problems.

What this guide covers

This guide provides descriptions of the Microplate Labeler and procedures for installation, setup, operation, and maintenance of the device.

This guide also describes how to use the following software:

• *Microplate Labeler Diagnostics.* You use the Diagnostics software to set up the device, create label formats, and troubleshoot the device. You can access Microplate Labeler Diagnostics via VWorks Automation Control, BenchWorks, or PlateTag software, or via the Microplate Labeler ActiveX controls.

• *PlateTag software.* For a standalone Microplate Labeler, you use PlateTag to run batch labeling jobs.

What this guide does not cover

This guide does not provide instructions for third-party software or for running protocols using the VWorks Automation Control software or the BenchWorks Automation Control software. For more information about these topics, see "Related guides" on page ix.

What is new in this revision

Description	See
Safety and regulatory compliance. Includes details about safety labels and product compliance.	"Safety guidelines" on page 1
Product specifications. Updated the compressed air, environmental, and computer requirements.	"Laboratory requirements" on page 33

Software version

This guide documents the following:

- Microplate Labeler Diagnostics version 15.0.50 or later
- PlateTag software version 7.0.24 or later

Related guides

If your Microplate Labeler is part of a lab automation system of workstation, use the relevant software and device guides in conjunction with this guide.

Type of system	See also these guides ...
VWorks software and BioCel System	• *VWorks Automation Control Setup Guide.* Explains how to set up the software and define labware. • *VWorks Automation Control User Guide.* Explains how to create protocols, set task parameters, and run protocols. Use this guide to set the parameters for the Print and Apply task when running a labeling protocol. • *BioCel System User Guide.* Explains how to set up, operate, and maintain the system.
VWorks software and BenchCel Microplate Handling Workstation	• *VWorks Automation Control Setup Guide.* Explains how to set up the software and define labware. • *VWorks Automation Control User Guide.* Explains how to create protocols, set task parameters, and run protocols. Use this guide to set the parameters for the Print and Apply task when running a labeling protocol. • *BenchCel Microplate Handling Workstation User Guide.* Explains how to install, set up, operate, and maintain the workstation.

Type of system	See also these guides ...
BenchWorks software and BenchCel Microplate Handling Workstation	• *BenchWorks Automation Control User Guide*. Explains how to define labware, create protocols, set task parameters, and run protocols. Use this guide to set the parameters for the Label and Apply task when running a labeling protocol. • *BenchCel Microplate Handling Workstation User Guide*. Explains how to install, set up, operate, and maintain the workstation.
Third-party system software	Relevant third-party system guides.

Related topics

For more information about...	See...
Reporting problems	"Reporting problems" on page 176
Other devices	"Accessing Automation Solutions user guides" on page x

Accessing Automation Solutions user guides

About this topic

This topic describes the different formats of Automation Solutions user information and explains how to access the user information.

Where to find user information

The Automation Solutions user information is available in the following locations:

- *Knowledge base*. The help system that contains information about all of the Automation Solutions products is available from the Help menu within the VWorks software.

- *PDF files*. The PDF files of the user guides are installed with the VWorks software and are on the software CD that is supplied with the product. A PDF viewer is required to open a user guide in PDF format. You can download a free PDF viewer from the internet. For information about using PDF documents, see the user documentation for the PDF viewer.

- *Agilent Technologies website*. You can search the online knowledge base or download the latest version of any PDF file from the Agilent Technologies website at www.agilent.com/lifesciences/automation.

Accessing safety information

Safety information for the Agilent Technologies devices appears in the corresponding device safety guide or user guide.

You can also search the knowledge base or the PDF files for safety information.

Using the knowledge base

Knowledge base topics are displayed using web browser software such as Microsoft Internet Explorer and Mozilla Firefox.

Note: If you want to use Internet Explorer to display the topics, you might have to allow local files to run active content (scripts and ActiveX controls). To do this, in Internet Explorer, open the **Internet Options** dialog box. Click the **Advanced** tab, locate the **Security** section, and select **Allow active content to run in files on my computer.**

To open the knowledge base, do one of the following:

- From within VWorks software, select **Help** > **Knowledge Base** or press F1.
- From the Windows desktop, select **Start** > **All Programs > Agilent Technologies > VWorks** > **User Guides** > **Knowledge Base.**

Opening the help topic for an area in the VWorks window
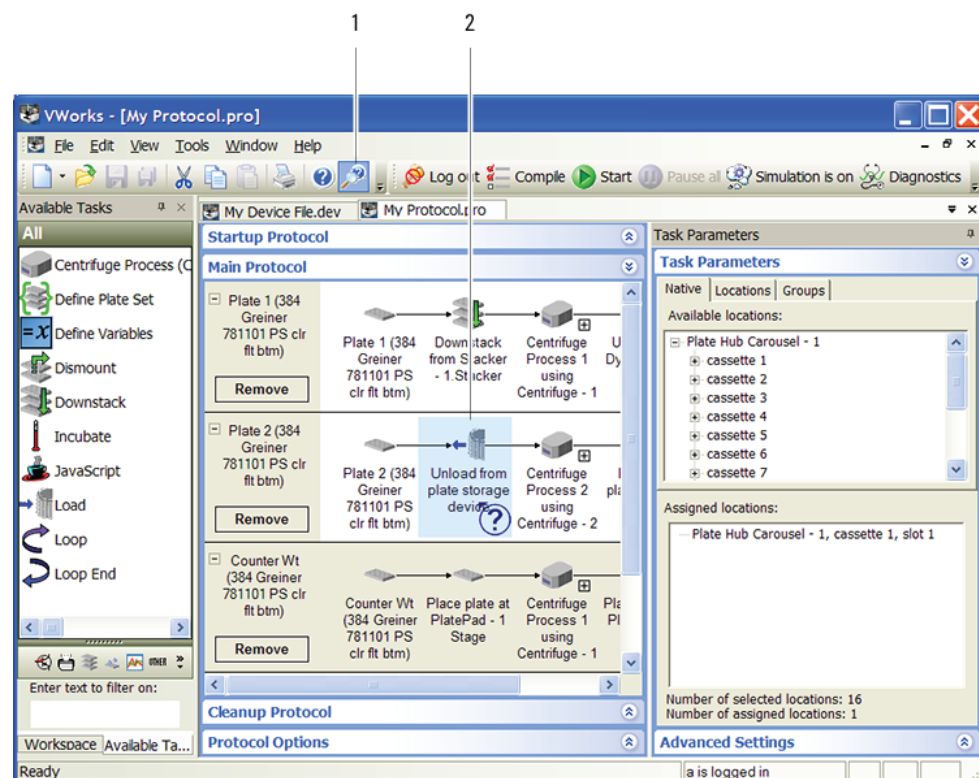
To access the context-sensitive help feature:

1 In the main window of the VWorks software, click the help button .

The pointer changes to . Notice that the different icons or areas are highlighted as you move the pointer over them.

2 Click an icon or area of interest. The relevant topic or document opens.

Features in the Knowledge Base window

Item	Feature
1	*Navigation area.* Consists of four tabs: • *Contents.* Lists all the books and the table of contents of the books. • *Index.* Displays the index entries of all of the books. • *Search.* Allows you to search the Knowledge Base (all products) using keywords. You can narrow the search by product. • *Favorites.* Contains bookmarks you have created.
2	*Navigation buttons.* Enable you to navigate through the next or previous topics listed in the Contents tab.
3	*Content area.* Displays the selected online help topic.
4	*Toolbar buttons.* Enable you to print the topic or send documentation feedback by email.

Related topics

For more information about...	See...
Who should read this guide and what this guide covers	"About this guide" on page viii
Reporting problems	"Reporting problems" on page 176
Microplate Labeler safety	"Safety guidelines" on page 1
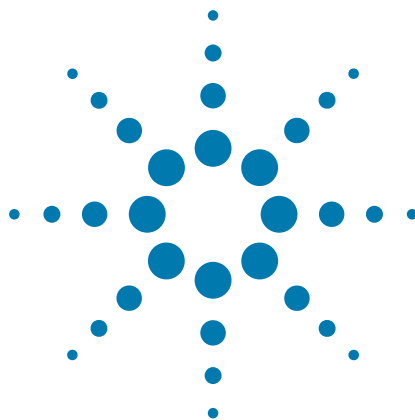
1
Safety guidelines

Before installing and using the Microplate Labeler, you must be familiar with the potential safety hazards and how to avoid them.

This chapter contains the following topics, which describe the safety information for the Microplate Labeler:

- "General safety information" on page 2
- "Safety and regulatory compliance" on page 4
- "Potential safety hazards" on page 5

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General safety information

Before installing and using the Microplate Labeler

Before installing and using the Microplate Labeler, make sure you are aware of the potential hazards and understand how to avoid being exposed to them. You must be properly trained in the correct and safe installation and operation of the device.

Intended product use

> ⚠️ **WARNING**   Do not remove the Microplate Labeler exterior covers or otherwise disassemble the system or device. Doing so can expose you to hazards that could cause serious injury and damage the Microplate Labeler.

> ⚠️ **WARNING**   Using controls, making adjustments, or performing procedures other than those specified in the user guide can expose you to hazardous voltage, high-pressure gas, and laser radiation.

Agilent Technologies products must only be used in the manner described in the Agilent Technologies product user guides. Any other use may result in damage to the product or personal injury. Agilent Technologies is not responsible for any damages caused, in whole or in part, by improper use of the products, unauthorized alterations, adjustments or modifications to the products, failure to comply with procedures in Agilent Technologies product user guides, or use of the products in violation of applicable laws, rules or regulations. Except as otherwise expressly provided in Agilent Technologies product user guides, any alteration, adjustment or modification to the products will void the product warranty and may invalidate the safety compliance certification.

The Microplate Labeler is not intended or approved for diagnosis of disease in humans or animals. You assume full responsibility for obtaining any regulatory approvals required for such use and assume all liability in connection therewith.

Safety labels

Pay attention to any safety labels affixed to your device. A safety label consists of a warning symbol. A description of the warning and information that will help you to avoid the safety hazard are provided in this user guide.

Warnings in the user documentation or on the device must be observed during all phases of operation, service, and repair of this device. Failure to comply with these precautions violates safety standards of design and the intended use of the product. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

The following table lists the common symbols you might find on the device. The symbol on the label indicates the risk of danger. A description of the warning and information that will help you avoid the safety hazard are provided in this guide.

Symbol	Description
⚠️	Indicates that you must read the accompanying instructions (for example, the safety guide) for more information before proceeding.
⚡	Indicates hazardous voltages.
✋	Indicates pinch, crush, and cut hazard.
☀️	Indicates laser hazard.
🔥	Indicates hot surface hazard.
⏚	Indicates protective conductor terminal, which is bonded to conductive parts of an equipment for safety purposes.
🗑️	Indicates that you must not discard this electrical/electronic product in domestic household waste.

Related information

For more information about...	See...
Compliance with regulations	"Safety and regulatory compliance" on page 4
Safety hazards	"Potential safety hazards" on page 5
Reporting problems with the Microplate Labeler	"Reporting problems" on page 176

Safety and regulatory compliance

Compliance standards

The Microplate Labeler complies with the applicable EU Directives and bears the CE mark. See the Declaration of Conformity for details. The Microplate Labeler is designed to comply with the standards listed in the following table.

Regulatory Compliance	Standard
EMC	
European Union	EMC Directive 2004/108/EC
	IEC 61326-1:2005 / EN 61326-1:2006
Canada	ICES/NMB-001:2004
Australia/New Zealand	AS/NZS CISPR 11:2004
Safety	
European Union	Machinery Directive 2006/42/EC
	Low Voltage Directive 2006/95/EC
	IEC 61010-1:2001 / EN61010-1:2001
Canada	CAN/CSA-C22.2 No. 61010-1-04
USA	ANSI/UL 61010-1:2004

Electromagnetic compatibility

If the Microplate Labeler causes interference with radio or television reception, which can be determined by turning the device off and on, try one or more of the following measures:

- Relocate the radio or television antenna.
- Move the device away from the radio or television.
- Plug the device into a different electrical outlet, so that the device and the radio or television are on separate electrical circuits.
- Make sure that all peripheral devices are also certified.
- Make sure that appropriate cables are used to connect the device to peripheral equipment.
- Consult your equipment dealer, Agilent Technologies, or an experienced technician for assistance.

Changes or modifications not expressly approved by Agilent Technologies could void the user's authority to operate the equipment.

Sound emission declaration

Sound pressure: Lp < 70 dB according to EN 27779:1991.

Schalldruckpegel: LP < 70 dB nach EN 27779:1991.

Related information

For more information about...	See...
Safety hazards	"Potential safety hazards" on page 5
General safety	"General safety information" on page 2
Reporting problems with the Microplate Labeler	"Reporting problems" on page 176

Potential safety hazards

About this topic

This topic describes potential hazards that you can encounter when using the Microplate Labeler.

Mechanical hazards

The Microplate Labeler contains the following moving parts.

Figure Microplate Labeler moving parts
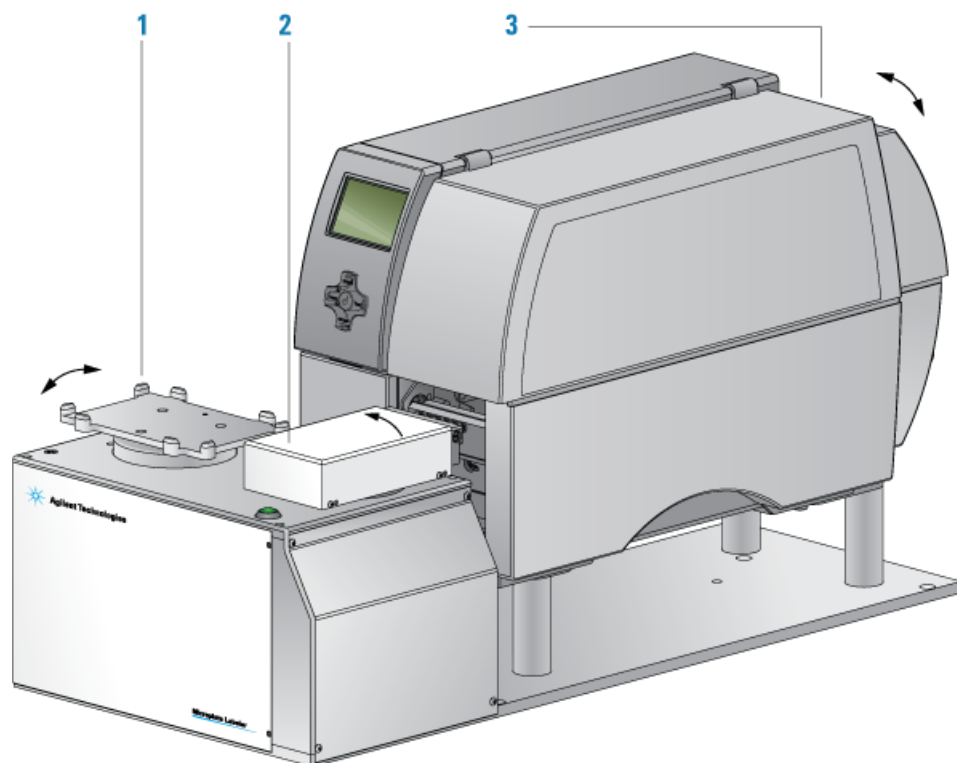
Item	Description
1	*Plate stage*. Automatically rotates side to side during labeling to present the long and short sides of a microplate to the applicator head.
2	*Applicator head*. Automatically rotates between the printer and the plate stage to apply the barcode labels.
3	*Printer*. Contains various parts that move automatically during a print run. Keep the cover closed while the device is operating.

WARNING   Pinch hazard. Do not reach between the plate stage and applicator head or between the applicator head and the printer while the device is on.

WARNING   Pinch hazard. Use care when closing the printer cover. Keep clear of the cover hinges and do not reach into the swivel range of the cover.

WARNING   If you operate the printer with the cover open or with the cover removed, ensure that you keep clear of the exposed rotating parts.

Hazardous-voltage electronics

Hazardous-voltage electronics can be found within the Microplate Labeler. Under normal operating conditions, you are protected from exposure to the hazardous voltage.

WARNING   Do not try to gain access to the interior of the Microplate Labeler. Do not remove panels for any reason. Exposure to the interior electronics of a device can cause severe injury.

Hazardous-voltage electronics can also be found in the computer. See the computer manufacturer documentation for the hazard warnings. Make sure you follow the instructions on the safe operation of the computer.

WARNING   Ensure that the power cords are in good condition and are not frayed. Use of frayed or damaged power cords can cause injury. Use of incorrect power cords can cause damage to the device.

Burn hazard

WARNING   The printer can become hot while printing. Do not touch the printer components during operation. Allow the printer to cool down before changing the media or cleaning the printer components.

High-pressure gas

Compressed air is used to move components inside the Microplate Labeler.

⚠️ **WARNING** **Working with open, charged air lines can result in injury. Turn off the compressed air line when disconnecting or reconnecting devices that use compressed air. Contact your facilities department or Automation Solutions Technical Support with questions about setting up the air line.**

Follow the local, state, and federal safety codes for the placement and mounting of gas cylinders. For example, you might have to attach a standard cylinder bracket to a solid permanent structure to meet or exceed all local seismic and safety requirements.

Always use good laboratory practices when handling high-pressure cylinders. Make sure you follow any instructions provided with the cylinders.

CAUTION Ensure that the air coming into the Microplate Labeler is properly filtered from moisture or aerosolized impurities. Significant moisture or impurities in the air line can adversely affect the performance and life of the device. Using oil compressors can cause oil to leak into the device and void your warranty.

Laser hazard on barcode reader

If your Microplate Labeler is fitted with a barcode reader, make sure you understand the potential hazard. The barcode reader on the Microplate Labeler may contain a laser used to read barcodes. The laser beam will not harm your skin, so there is no danger in exposing your arms or hands to the beam. However, you could damage your eyes if you stare directly into the beam.

Barcode readers emit light for up to 0.5 seconds only when taking a reading. The potential hazard is present only during protocol runs. When a microplate is being read, the beam should not pass beyond the microplate.

⚠️ **WARNING** **Class II laser hazard. Do not look directly at the laser beam. Looking directly at the laser beam can result in serious eye injury.**

⚠️ **WARNING** **Do not disassemble the barcode reader sensor heads. Laser emission from the reader is not automatically stopped if the sensor head is disassembled.**

⚠️ **WARNING** **Unless following a procedure in a Agilent Technologies user guide, do not touch the white TEST button on the side of the barcode reader sensor head. This button turns on the laser creating the possibility of a long exposure to the light.**

Chemical hazards

Some chemicals used when working with the Microplate Labeler can be hazardous. Make sure you:

*   Follow standard laboratory procedures and cautions when working with chemicals.
*   Follow your local, state, and federal safety regulations when using and disposing of the chemicals.

Related information

For more information about...	See...
General safety	"General safety information" on page 2
Locations of hardware components	"Hardware overview" on page 12
Site laboratory requirements	"Laboratory requirements" on page 33
Reporting problems with the Microplate Labeler	"Reporting problems" on page 176
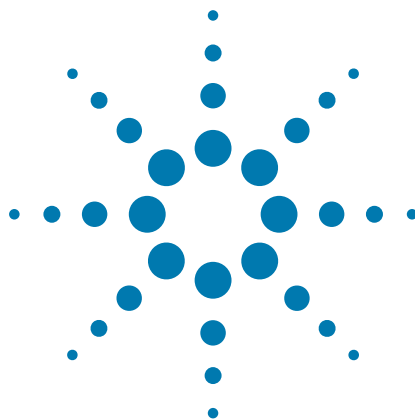
2
Introduction to the Microplate Labeler

This chapter provides the background information required to successfully operate the Microplate Labeler.

The topics are:

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About the Microplate Labeler

About this topic

This topic provides an overview of the G5404B Microplate Labeler.

Microplate Labeler description

The Microplate Labeler prints labels and applies them to labware.

Figure   Microplate Labeler
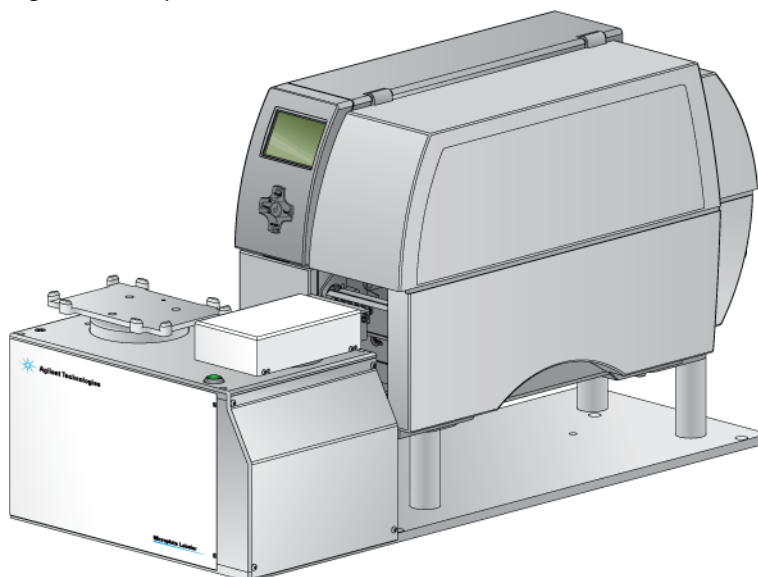
You can create and apply the same or a different label on up to four sides of a microplate. Each label can include up to six fields, including a barcode field and human-readable text fields.

Figure   Microplate (side view) with barcode label

An optional barcode reader can verify that the barcode has been printed and applied correctly, and can be used to clone an existing barcode.

System configuration variations

A Microplate Labeler can be used in the following configurations:

- Integrated with an Agilent Technologies lab automation system, such as a BioCel System or BenchCel Microplate Handling Workstation
- As a standalone device
- Integrated with a third-party lab automation system

Integrated in an Agilent Technologies lab automation system

When the Microplate Labeler is integrated with an Agilent Technologies BioCel System or BenchCel Workstation:

•   The lab automation software (VWorks software or BenchWorks software) controls the device to perform labeling protocols automatically.

•   The robot on the BioCel System or BenchCel Workstation automatically moves the microplates to and from the Microplate Labeler plate stage.

Figure   BenchCel Workstation consisting of a BenchCel Microplate Handler (left) integrated with Microplate Labeler (right)
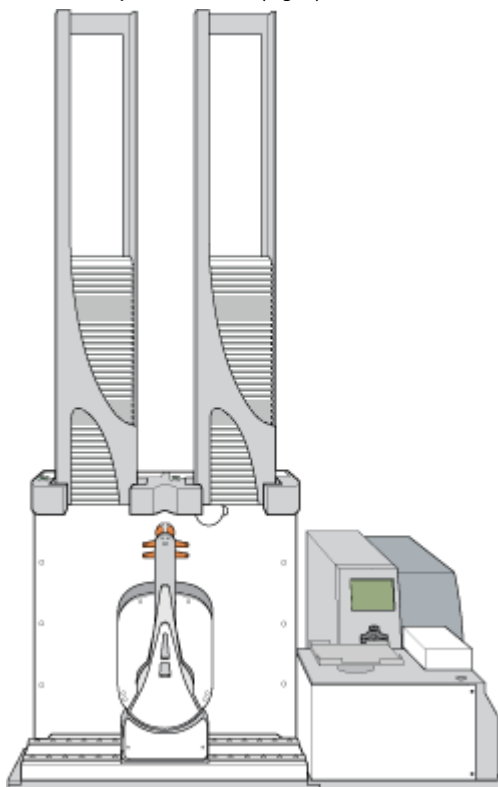
Standalone Microplate Labeler

When used as a standalone device:

•   The PlateTag software controls the device to perform batch print jobs.

•   The operator places a microplate on the plate stage, presses the green button to perform the print-and-apply operation, and then replaces the labeled microplate with the next microplate to be labeled.

IMPORTANT   The Microplate Labeler is designed to generate printed adhesive labels that are automatically applied to microplates. Although it is possible to print a single test label, manually peel the label off the backing, and place the label on a microplate by hand, printing of multiple labels for manual application is not supported for a standalone Microplate Labeler using the PlateTag software.

Integrated in a third-party lab automation system

When the Microplate Labeler is integrated in a third-party lab automation system, the third-party software uses the Microplate Labeler ActiveX controls to perform labeling protocols.

Related topics

For information about...	See...
Instrument control software	"Overview of the controlling software" on page 19
Workflows for setting up and using the device	• "Integrated Microplate Labeler— operation workflow" on page 27 • "Standalone Microplate Labeler— operation workflow" on page 29
ActiveX controls	"Microplate Labeler ActiveX control" on page 205

Hardware overview

About this topic

This topic describes the Microplate Labeler hardware features, including the optional barcode reader.

Microplate Labeler front view

The Microplate Labeler is comprised of a barcode applicator and label printer assembled on a baseplate.

Figure Microplate Labeler components (front view)

Item	Feature	Description
1	Printer	Prints a label (600 dpi) and pauses when the label reaches the peelbar to allow the applicator head to retrieve the printed label. The printer supports the printing of linear or two-dimensional (2D) barcodes.
2	Applicator	Contains the plate stage, applicator head, green button, electronics, and the connection panel (back side) for the device.
3	Plate stage	Provides a platform to support a plate delivered by a robot or a person.
		The plate stage rotates side to side to enable labeling on all four sides of a microplate. The plate stage rotation also allows the optional barcode reader to read any side of a microplate.
		The plate stage can move up and down to provide a choice of two vertical labeling positions to accommodate labware of varying heights.
		IMPORTANT If you purchased a standalone Microplate Labeler and later decide to integrate the device with a BenchCel Workstation or BioCel System, a different type of plate stage may be required. Contact Automation Solutions Technical Support for more information.
4	Green button	Starts a print-and-apply operation for printing test labels, or starts a PlateTag batch print job.
		See "PlateTag print jobs and schemas" on page 116.

Item	Feature	Description
5	Applicator head	Rotates between the printer and the plate stage. Uses vacuum pads (suction cups) to pick up a printed label from the printer and apply the label to a microplate on the plate stage.
6	Vacuum pads	Uses vacuum to pick up a label from the printer and uses compressed air to apply the label to a microplate on the plate stage.
7	Printer peelbar	Provides a platform for presenting each label to the applicator head vacuum pads. As the label strip travels over the peelbar, each label lifts off the label backing slightly to allow the applicator head to pick up the label.

Microplate Labeler connection panel (back view)

The Microplate Labeler connection panel is on the back of the applicator, next to the printer.

Figure   Microplate Labeler connection panel (back view)

Item	Feature	Description
1	Air supply port	Connects to a compressed-air source. The device uses compressed air to: • Move the plate stage up and down • Rotate the applicator head side to side • Extend and retract the applicator head • Create a vacuum that the applicator head uses to pick up labels from the printer • Apply labels to a microplate

Item	Feature	Description
2	Ethernet port	Connects an Ethernet cable from the controlling computer to the Microplate Labeler for communication.
		You use one of the following cables from the Microplate Labeler utility kit:
		• Black Ethernet CAT5E RJ45 cable, 3.048-m (10-ft), for use with a network switch or hub.
		• Red Ethernet CAT5E RJ45 crossover cable, 3.048-m (10-ft), for connecting the device directly to the computer.
		IMPORTANT Ethernet is the recommended mode of communication. If you connect to the Microplate Labeler using the Ethernet port, you do not use the serial port.
3	Barcode reader port	Connects the cable from the optional barcode reader to the Microplate Labeler for communication.
4	Serial port	Connects a serial cable from the controlling computer to the Microplate Labeler to provide serial communication.
		You can use the 1.8-m (6-ft) serial-communications cable (beige) provided in the Microplate Labeler utility kit.
		Note: If you connect to the Microplate Labeler using the serial port, you do not use the Ethernet port.
5	Power switch	Turns on (|) or off (o) the power.
6	AC power port	Connects the power cable.
7	Pressure gauge	Indicates the regulated air pressure.
8	Air pressure regulator	Regulates the incoming air pressure to ensure that the device's internal components are not exposed to air pressure that is too high.
9	Fuse holder	Houses the electrical fuse.

Printer overview

Printer front view

Figure   Printer front view with cover opened
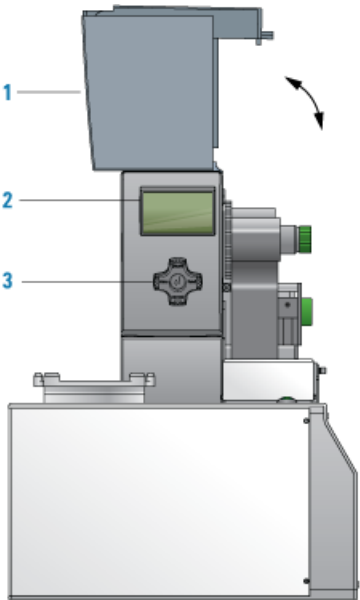
Item	Feature	Description
1	Cover	Removable transparent plastic cover that opens to provide access for cleaning the printer components and changing the media.
2	Printer service display	Displays the Ready message and various messages for service. **IMPORTANT** The printer display must show the Ready indicator before you can initialize the device. During operation, the software displays operator messages and error messages on the computer screen.
3	Service navigator pad	Used by the factory and field service personnel to set up the printer or change settings on the printer. **IMPORTANT** Do not use the navigator pad to change the printer settings unless instructed to do so by Automation Solutions Technical Support.

Printer side view

Figure   Printer side view with cover removed
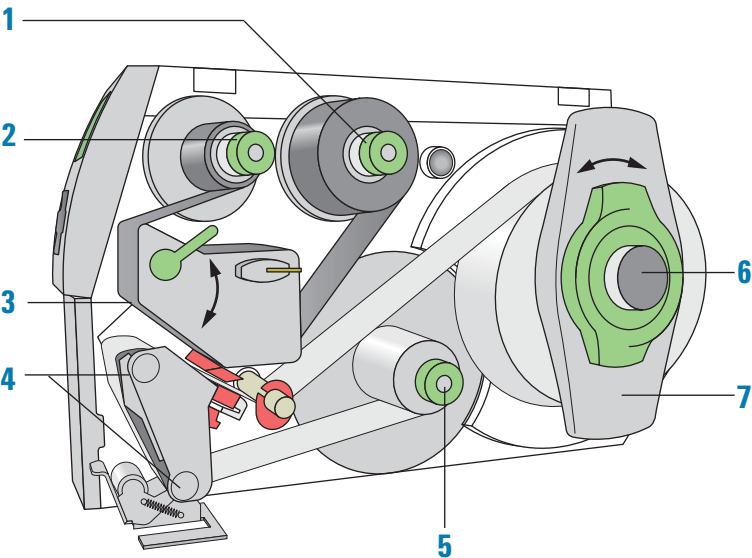
Item	Feature	Description
1	Ribbon supply hub	Holds the unused printer ribbon roll.
		The printer requires the G5404B Microplate Labeler Media Kit (not shown), which contains the thermal transfer ribbon and labels for the printer.
2	Ribbon take-up hub	Rewinds the used ribbon.
3	Printhead (hidden under the ribbon)	The narrow bar that presses the image through the ribbon and onto the label as the media move into position on to the print roller.
4	Print roller and rewind assist roller	The rollers that assist in moving the label strip under the printhead (print roller) and to the internal rewinder.
5	Internal rewinder	Rewinds and holds the used label strip.
6	Roll retainer	Holds the unused label roll.
7	Margin stop	Locks the roll retainer and holds the ribbon roll securely in place.

Barcode reader

The optional barcode reader is connected to the Microplate Labeler so that it can be used with the software to verify or clone barcodes.

IMPORTANT Successful integration of a barcode reader requires that the barcode reader have the correct pinouts, power, and is able to communicate the correct commands to the Microplate Labeler.

Figure Microplate Labeler with barcode reader installed
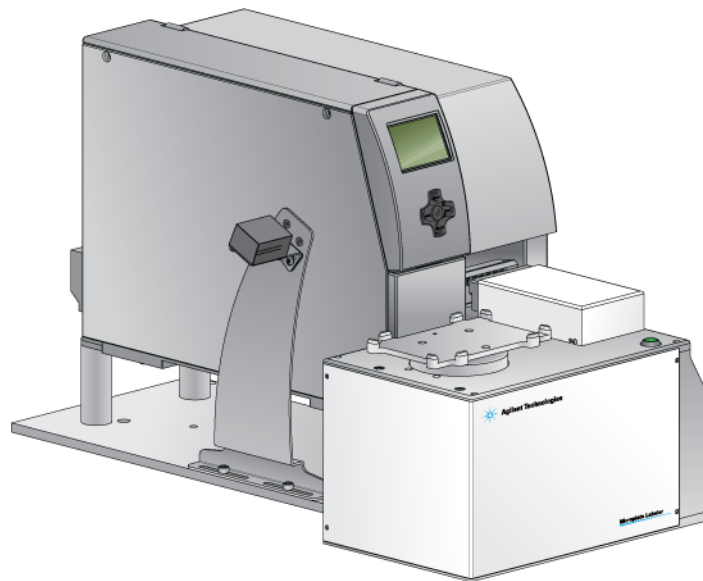
Related information

For information about...	See...
Barcodes	• "Introduction to microplate labels and barcodes" on page 24
	• "Barcodes and supported symbologies" on page 109
The labeling process	"How the Microplate Labeler applies a label" on page 26
How to install and use the barcode reader	Automation Solutions Technical Support

Overview of the controlling software

About this topic

This topic provides an overview of the following software:

- *Automation control software.* Used to set up and run the print jobs or labeling protocols.
- *Microplate Labeler Diagnostics.* Used to set up the device, create label formats, and troubleshoot problems.

Automation control software

You use the automation control software to set up the print-and-apply tasks and to run the labeling protocols. When you set up the print-and-apply tasks, you select a label format and specify the parameters for the label content.

The automation control software that you use depends on your configuration.

Device configuration	Controlling software
Microplate Labeler integrated with a BioCel System	VWorks software
Microplate Labeler integrated with a BenchCel Workstation	• VWorks software • BenchWorks software
Standalone Microplate Labeler	PlateTag software
Third-party lab automation system	Microplate Labeler (VCode) ActiveX

VWorks software and BenchWorks software overview

The VWorks software and BenchWorks software enable you to:

- *Set up the system.* During setup, you create device files for your specific set of devices. You can also create user accounts with different levels of privileges to enforce access policies.
- *Define labware.* Labware definitions describe the type and the geometry of the labware that the devices will be handling during the protocol runs. For the Microplate Labeler, the labware definition includes the plate stage height.
- *Create protocols.* Protocols determine the sequence of tasks that you want to automate in a run. For example, you can use a protocol to apply barcode labels to 100 microplates automatically.
- *Run, pause, monitor, and stop protocols.* You can start, pause, monitor, and stop a protocol run from the controlling computer.

For more details on your automation control software, see the *VWorks Automation Control User Guide* or *BenchWorks Automation Control User Guide*.

Microplate Labeler Diagnostics overview

Microplate Labeler Diagnostics is a component of the provided software. You can access Microplate Labeler Diagnostics through the VWorks software, BenchWorks software, PlateTag software, or the ActiveX controls.

You use Microplate Labeler Diagnostics to set up and troubleshoot the device, including:

- *Create and manage profiles.* These are the communication settings that the automation control software uses to execute the print jobs or labeling protocols.

- *Create and edit label formats.* You can use the provided templates and customize them to create your own label formats.

- *Perform test print-and-apply operations.* You can print test labels when verifying a label format design, setting up the device, or troubleshooting problems.

- *Set up the plate stage positions.* If required, you can adjust the plate stage positions, for example the robot pickup angle for a device that is integrated in an automation control system.

- *Check the basic device functions.* You can actuate the pneumatic controls to verify the device functioning and to check the alignment of the plate stage and applicator head.
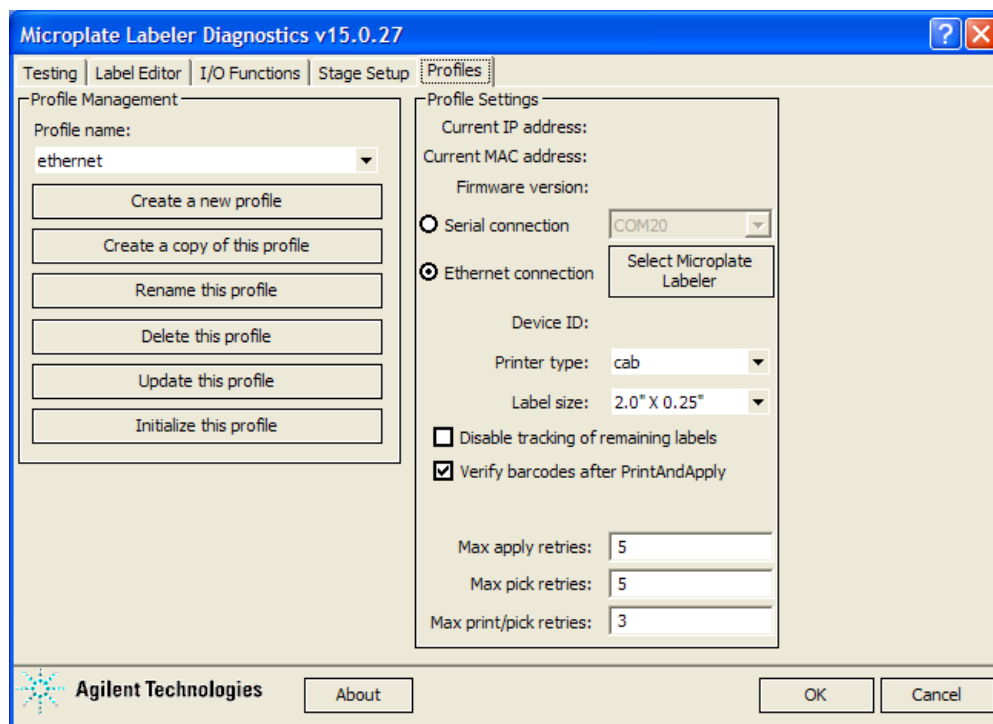
PlateTag overview

You use the PlateTag software if you have a standalone Microplate Labeler. PlateTag has two tabbed pages:

- *Print Job tab.* Provides controls for selecting the device profile to establish communication with the connected Microplate Labeler, configuring a print job, and starting and monitoring the print job.

- • *Schemas tab*. Enables you to create, copy, update, and delete schemas. A schema is a set of parameters used to define the contents and format of one label.

Figure PlateTag Print Job tab

Figure PlateTag Schemas page

For information about...	See...
Starting Microplate Labeler Diagnostics	• "Opening Microplate Labeler Diagnostics" on page 75 • "Quick reference to Diagnostics software" on page 179
VWorks software	• "VWorks software—establishing communications with the device" on page 65 • *VWorks Automation Control User Guide*
BenchWorks software	• "BenchWorks—establishing communications with the device" on page 70 • *BenchWorks Automation Control User Guide*
PlateTag software	• "PlateTag software—establishing communications with the device" on page 73 • "PlateTag print job workflow" on page 114
ActiveX controls	"Microplate Labeler ActiveX control" on page 205

Labware considerations

About this topic

This topic provides guidelines for selecting automation-ready labware for use with the Microplate Labeler.

Acceptable microplates

The Microplate Labeler accommodates a wide range of microplates that meet American National Standards Institute (ANSI) Standards ANSI/SBS 1-2004 through ANSI/SBS 4-2004. For the latest labware standards, go to www.sbsonline.org. You can also contact the labware manufacturer to inquire about ANSI-compliant labware.

For use of nonconforming labware, please contact Automation Solutions Technical Support.

Figure   Microplate (side view) with barcode label

Challenging microplate characteristics

Some microplates have special features specifically designed for particular instruments but are not optimized for the application of labels. If a label is applied to an uneven surface, for example overlapping the edge of a microplate skirt, the label is less likely to adhere to the labware.

The dimensions of the labels for the G5404B Microplate Labeler are 0.635-cm by 5.08-cm (0.25-by 2-in). To attach these labels to a microplate successfully, the microplate side must have a flat, even surface that is slightly larger than the label.

Attempting to apply a label to an uneven surface is not recommended. For example, the following features may prevent successful labeling of the microplate:

- Microplate with raised surfaces on the sides

- Microplate with tall skirt

- Low profile microplates where the available height for label placement is very near or in some cases less than the height of the label itself

Related topics

For information about...	See...
Label formats and content	"About label formats and content" on page 92
How to design a label format	"Creating and editing label formats" on page 94
Plate stage and applicator head positions	"About plate stage and applicator head positions" on page 81
Setting the height of the plate stage position	"Setting the plate stage vertical positions" on page 84

Introduction to microplate labels and barcodes

About this topic

This topic provides an overview of the labels that you can create for the Microplate Labeler and a general description of barcode types.

Microplate labels

The labels that you create for the Microplate Labeler can contain up to six fields of data, including one barcode field and five human-readable text fields. The following figure shows an example of a typical label that contains two fields: one barcode field and one human-readable field. In the example, the barcode field has a blank margin (quiet zone) on each end to ensure that a barcode reader can read the barcode successfully.

Figure   Example of a microplate barcode label
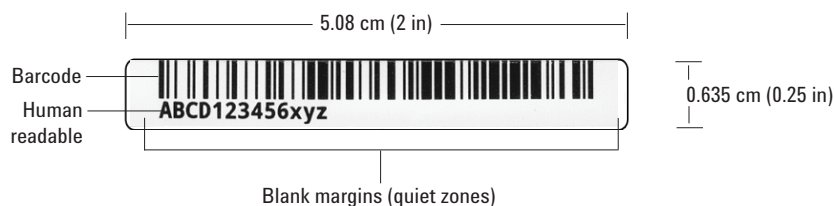
About barcodes

Barcodes contain information that can be read automatically, facilitating the fast and accurate tracking of microplates in lab automation systems. A barcode reader scans the line patterns, and software converts the encoded patterns into usable information.

The method used for creating a barcode from text is called its *symbology*. Your choice of symbology depends on the barcode reader used for your application and your laboratory preferences.

The Microplate Labeler can print either linear or two-dimensional (2D) barcodes.

Linear barcodes

A linear barcode is a sequence of parallel bars and spaces of variable widths that are arranged in groups. Each group represents an individual number, letter, or symbol. Within each group, the information is encoded by the relative thicknesses and relative positions of the bars and spaces. A linear barcode symbol contains a leading blank margin (quiet zone), a start character, one or more data characters, a stop character, and a trailing quiet zone.

Figure   Example of a linear barcode using Code 128 symbology

Two-dimensional barcodes

2D barcodes are comprised of dots or small bars arranged as a matrix or in a stacked arrangement. The 2D barcodes typically can contain more information than linear barcodes because they encode data in both the vertical and horizontal directions.

Figure   Example of a 2D barcode using Data Matrix symbology

Related topics

For information about...	See...
Label formats and content	"About label formats and content" on page 92
How to design a label format	"Creating and editing label formats" on page 94
Barcodes symbologies	"Barcodes and supported symbologies" on page 109

How the Microplate Labeler applies a label

About this topic

This topic describes what happens when you run a Microplate Labeler print-and-apply task.

Process

The following sequence of events occurs when you start a print-and-apply task:

1 The Microplate Labeler prints the label and moves the printed label forward to the peelbar on the printer. As the label strip reaches the peelbar, the printed label lifts off the backing.

2 The applicator head extends towards the printer until the vacuum pads touch the printed label.

3 A vacuum is created in the applicator head's vacuum pads to grip the label.

4 After the vacuum is sensed, the applicator head retracts with the label held by the vacuum pads.

5 The plate stage rotates so that the selected side of the microplate is facing the applicator head.

6 The applicator head rotates until it is perpendicular to the microplate on the plate stage, and then extends, pushing the label onto the microplate.

7 Air is pushed through the vacuum pads, breaking the vacuum seal.

8 The applicator head retracts and returns to face the printer.

9 The plate stage moves to the next selected position.

Related topics

For information about...	See...
Locations of hardware components	"Hardware overview" on page 12
Workflows for operating the Microplate Labeler	• "Integrated Microplate Labeler—operation workflow" on page 27 • "Standalone Microplate Labeler—operation workflow" on page 29
Label formats and content	"About label formats and content" on page 92
Plate stage and applicator head	"About plate stage and applicator head positions" on page 81
Testing the functions of the applicator	"Checking the basic applicator functions" on page 144

Integrated Microplate Labeler—operation workflow

About this topic

This topic describes the workflow for setting up and operating an integrated device using the VWorks software or BenchWorks software.

If you are using the PlateTag software to run a standalone Microplate Labeler, see "Standalone Microplate Labeler–operation workflow" on page 29.

Note: The steps for installing and operating the Microplate Labeler in a third-party lab automation system might differ. For details, see the third-party user documentation provided with that system.

Microplate Labeler in an Agilent Technologies lab automation system or workstation

Step	Procedure	For more details, see...
1	Install the Microplate Labeler. Agilent Technologies performs this step for devices integrated in a BenchCel Workstation or BioCel System.	"Installation workflow" on page 32
2	Set up the Microplate Labeler. Agilent Technologies performs this step for devices integrated in a BenchCel Workstation or BioCel System.	"VWorks or BenchWorks–setup workflow for integrated device" on page 63
3	Create label formats for printing. The software includes a variety of templates that you can use or customize for your application.	"Creating and editing label formats" on page 94
4	To specify the plate stage height for your labware, open the Labware Editor and set the value in the labware definition (Plate Properties tab).	See the appropriate guide for your software: • *VWorks Automation Control Setup Guide* • *BenchWorks Automation Control User Guide*
5	Perform a test print-and-apply test from Microplate Labeler Diagnostics to check the label format and label position on the microplate.	"Performing a print-and-apply test" on page 146
6	Create the protocols to run the labeling task. You set the labeling task parameters, including the label content, and select the label format for each labeling task.	See the appropriate guide for your software: • *VWorks Automation Control User Guide*, Print and Apply task • *BenchWorks Automation Control User Guide*, Apply Label task

Step	Procedure	For more details, see...
7	Start the protocol.	See the applicable user guide for your software: • *VWorks Automation Control User Guide* • *BenchWorks Automation Control User Guide*

Related topics

For information about...	See...
Locations of hardware components	"Hardware overview" on page 12
Safety	"Safety guidelines" on page 1
Reporting problems	"Reporting problems" on page 176
Standalone device and the PlateTag workflow	"Standalone Microplate Labeler—operation workflow" on page 29
ActiveX controls	"Microplate Labeler ActiveX control" on page 205

Standalone Microplate Labeler—operation workflow

About this topic

This topic describes the workflow for using the PlateTag software to run a standalone Microplate Labeler.

If you have a Microplate Labeler that is integrated in a BenchCel Workstation or a BioCel System, see "Integrated Microplate Labeler–operation workflow" on page 27.

Workflow

Step	Procedure	See...
1	Install the Microplate Labeler. Agilent Technologies may perform this step for you.	"Installation workflow" on page 32
2	Set up the Microplate Labeler. Agilent Technologies may perform this step for you.	"PlateTag–setup workflow for standalone device" on page 72
3	Create label formats for printing. The software includes a variety of templates that you can use or customize for your application.	"Creating and editing label formats" on page 94
4	Perform a test print-and-apply test from Microplate Labeler Diagnostics to check the label format and label position on the microplate.	"Performing a print-and-apply test" on page 146
5	Create schemas and print jobs in the PlateTag software and run a print job.	"PlateTag–Running a print job" on page 113

Related topics

For information about...	See...
Locations of hardware components	"Hardware overview" on page 12
Safety	"Safety guidelines" on page 1
Reporting problems	"Reporting problems" on page 176
Integrated device and the VWorks software or BenchWorks software workflow	"Integrated Microplate Labeler–operation workflow" on page 27
ActiveX controls	"Microplate Labeler ActiveX control" on page 205
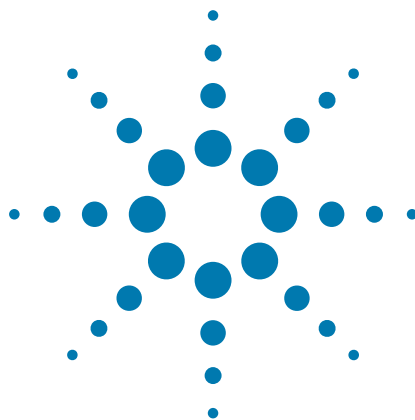
3
Unpacking and installing the Microplate Labeler

This chapter describes how to unpack and install the Microplate Labeler.

The topics are:

Agilent Technologies

Installation workflow

About this topic

This topic provides the workflow for installing a Microplate Labeler. Typically, Agilent Technologies completes this initial installation for you.

Workflow

Step	For this task...	See...
1	Ensure that your laboratory meets the site requirements.	"Laboratory requirements" on page 33
2	Unpack the Microplate Labeler.	"Unpacking and inspecting the Microplate Labeler" on page 36
3	Connect the air tubing.	• "Connecting the air tubing: non-metric" on page 38 • "Connecting the air tubing: metric" on page 40
4	Connect the Microplate Labeler to the power source.	"Connecting the power cord" on page 43
5	Connect the Microplate Labeler to the computer using either an Ethernet or serial connection.	"Connecting the Microplate Labeler to the computer" on page 45
6	Install the automation control software.	"Installing the automation control software" on page 48.
7	Install the labels and ribbon in the printer.	"Loading labels and ribbon" on page 50
8	Install the barcode reader (Optional).	Automation Solutions Technical Support

Related topics

For information about...	See...
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Laboratory requirements

About this topic

This topic describes the requirements for the site where you plan to install the Microplate Labeler.

Laboratory space requirements

General bench requirements

Make sure the bench for the Microplate Labeler has the following:

- Sufficient space to accommodate the Microplate Labeler, computer, monitor, and accessories
- Sufficient clearance:
  - On the back of the device to access power, communication, and air tubing connections
  - Above the printer to open the printer cover
  - On the side of the printer to replace the label and ribbon rolls

  Note: The snap-off cover can be removed from the printer if the device is operated within an enclosure where no corrosive chemicals or gases are present.
- A fixed bench (without wheels) that can support the weight of the Microplate Labeler without excessive shaking or movement
- Proper height for any operator to comfortably operate the Microplate Labeler

Microplate Labeler physical specifications

Dimension	Value
Width	28.7 cm (11.3 in)
Height	35.1 cm (13.8 in)
Height with printer cover opened	48.8 cm (19.2 in)
Depth	62.2 cm (24.5 in)
Weight	21 kg (47 lbs)

Note: Measurements do not include the cables or the computer.

Figure   Microplate Labeler dimensions (front and side views)
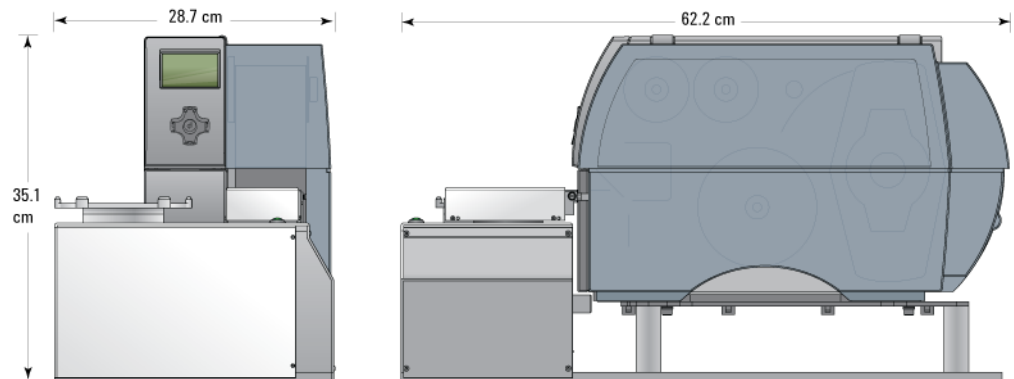
Figure   Microplate Labeler with printer cover open (front view)
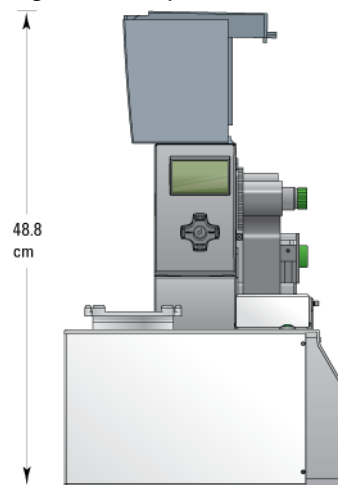
Electrical requirements

The Microplate Labeler device has the following power requirements:

Utility	Requirement
Electrical	100–240~, 50/60 Hz, 2.75 A
Fuse	Two 3 A, 0.25 x 1.25 in (6.35 x 31.75 mm), fast acting

Compressed air requirements

The Microplate Labeler requires the use of clean, dry, compressed air to move the pneumatic components. The compressed air can be from the following sources:

• Centralized source (laboratory)

• Compressed-air cylinders

• Portable pumps

> **CAUTION** Ensure that the air coming into the Microplate Labeler is properly filtered from moisture or aerosolized impurities. Significant moisture or impurities in the air line can adversely affect the performance and life of the Microplate Labeler. Using oil compressors can cause oil to leak into the Microplate Labeler and void your warranty.

The Microplate Labeler has the following minimum compressed-air requirements:

Requirement	Value
Quality	Clean, dry, compressed
Flow rate and pressure	1.2 Lps at 0.59 MPa (2.5 cfm at 85 psi)

Environmental requirements

The lab must meet the following environmental requirements:

Requirement	Value
Ambient temperature	4-40 °C
Humidity condition	10-90% RH, non-condensing
Elevation	1–2000 m

Make sure the Microplate Labeler is located away from moisture (sprays of water or mists).

Computer requirements

The requirements of the controlling computer depend on the lab automation software you are using.

- *VWorks software computer requirements.* See the VWorks software release notes or the Automation Solutions Knowledge Base at www.agilent.com/lifesciences/automation.
- *Third-party automation software requirements.* See the user documentation supplied with the product.
- *PlateTag software requirements.* Make sure the computer meets the following minimum requirements:
  - Computer system
    - Microsoft Windows XP with Service Pack 3
    - 2 GHz or faster 32-bit (x86) processor (recommended)
    - 2 GB system memory (recommended)
    - 40 GB hard drive capacity with 10 GB free space (recommended)
    - 1280 x 1024 pixel screen resolution
    - Microsoft Internet Explorer 6.0 or Mozilla Firefox 1.0 with JavaScript enabled (required for using the context-sensitive help and knowledge base)

- • A PDF viewer, such as Adobe Reader (required for opening the user guide PDF files)
  - – Communications interface using one of the following:
    - • Dedicated 10BaseT or faster Ethernet card (two network cards if connecting to your local area network)
    - • RS-232 DB9 serial port, if you are controlling a device via a serial connection

Related topics

For information about…	See…
How to install the device	"Installation workflow" on page 32
How to install the software	"Installing the automation control software" on page 48
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Unpacking and inspecting the Microplate Labeler

About this topic

This topic describes how to unpack and inspect the Microplate Labeler before installation.

Before you start

⚠️ **WARNING**   **The Microplate Labeler weighs 18.7 kg (41.3 lb). Do not attempt to unpack or move the Microplate Labeler without assistance. Always use proper lifting techniques to avoid injury.**

Verify the following:

- • Ensure the installation site meets the requirements specified in "Laboratory requirements" on page 33.
- • Inspect the shipping container and verify there is no obvious shipping damage. If damage has occurred, contact Automation Solutions Technical Support.

Inspection

IMPORTANT   While unpacking your Microplate Labeler, inspect all items for shipping damage. If you encounter a problem, contact Automation Solutions Technical Support as soon as possible. Save the packaging materials in case you must move or ship the Microplate Labeler.

Check to make sure the following items are included with your shipment:

- G5404B Microplate Labeler
- Air connection kit (non-metric or metric), including tubing and fittings
- G5404B Microplate Labeler Media Kit
    - Roll of labels (6,500)
    - Thermal transfer ribbon
    - Empty ribbon core for winding the used ribbon
    - Pen for cleaning the printhead and print roller
- G5404B Microplate Labeler software and documentation CD-ROM
- *G5404B Microplate Labeler User Guide*
- Serial communications cable
- Red Ethernet CAT5E RJ45 crossover cable, 3.048-m (10-ft), for connecting the device directly to the computer.
- Black Ethernet CAT5E RJ45 cable, 3.048-m (10-ft), for use with a network switch or hub
- Hex wrench (2.5 mm)
- Power cord appropriate for your country

Air fittings

Depending on the configuration of your air supply system, one or more of the provided air fittings may be required. If your air system has a different configuration, you must supply your own fittings.

Related topics

For information about...	See...
How to install the device	"Installation workflow" on page 32
Site requirements for installation	"Laboratory requirements" on page 33
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Connecting the air tubing: non-metric

About this topic

For non-metric-based installations, such as those in the U.S., this topic explains how to connect the air tubing to the Microplate Labeler.

Before you begin

⚠️ **WARNING**   **To avoid injury, turn off the air supply before installing your Microplate Labeler. When air is flowing, air tubing can injure you if it whips around and strikes you. If you have not been trained in the correct way to handle air tubing, contact your facilities department.**

CAUTION   Make sure that the air tubing coming into your Microplate Labeler is properly filtered for moisture. Moist air might shorten the life of your device. If the quality of your air supply is in question, contact Automation Solutions Technical Support.

Locate the air connection kit (non-metric), including tubing and fittings, provided with your device.

Connection procedure

To set up a direct connection, use the following procedure. If you have another device connected to the air supply, you can use the supplied quick-release T-connector to connect to the existing air tubing.

Figure   Connection panel: orange air-supply port (left) and pressure gauge (right)
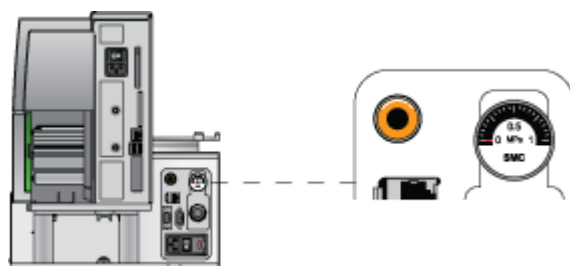
To install the air tubing:

1   Cut the supplied 1/4-inch tubing to the required length.

2   If your air supply uses a threaded connection at the supply end, attach the 1/4-inch NPT fitting to the connection.

3   Plug one end of the tubing into your lab's air supply.

4   Connect the tubing from the air source to the long end of the toggle switch assembly. Connect the short end of the toggle switch assembly to the tubing that connects to the Microplate Labeler.

5   Push the other end of the 1/4-inch tubing into the orange quick-release air-supply port at the back of the Microplate Labeler.

6   Test the installation by gently tugging the air tubing.

If you feel resistance, the line has been installed properly.

Related topics

For information about...	See...
How to install the device	"Installation workflow" on page 32
Site requirements for installation	"Laboratory requirements" on page 33
How to connect air tubing for metric-based installations	"Connecting the air tubing: metric" on page 40
Setting the air pressure	"Setting the air pressure" on page 42
Disconnecting air supply	"Disconnecting the air tubing" on page 163
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Connecting the air tubing: metric

About this topic

This topic explains how to connect the air tubing to the Microplate Labeler for metric-based installations.

To make the Microplate Labeler compatible with your lab's air system, you connect the supplied 6-mm air tubing to the Microplate Labeler air supply port. This topic describes how to make this connection.

Figure   Connection panel: orange air-supply port (left) and pressure gauge (right)
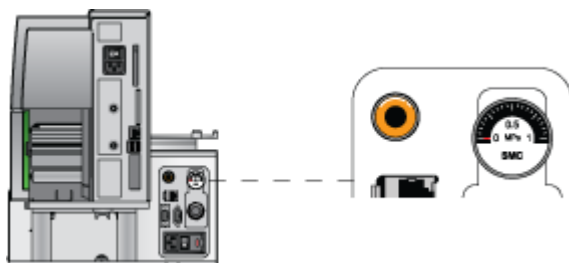
Before you start

WARNING   **Turn off the air supply at the source before installing the Microplate Labeler. If you have not been trained in the correct way to handle air tubing, contact your facilities department or Automation Solutions Technical Support for assistance.**

CAUTION   Make sure that the air coming into the Microplate Labeler is dry and free of impurities, such as oil, which can damage the Microplate Labeler. If you have any questions about air quality, contact Automation Solutions Technical Support.

Locate the air connection kit (metric), including tubing and fittings, provided with your device.

Connection assembly

The metric fittings kit contains an adapter.

Figure   Connection to Microplate Labeler using adapter
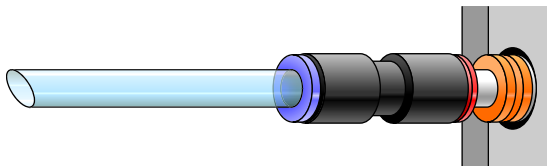
Procedure

The following procedure is used to set up a direct connection. If you have another instrument connected to the house air supply, you can use the supplied T‑connector to connect into the existing air tubing.

To connect the metric fittings adapter:

1 Push one end of the nipple (white plastic tube) into the 1/4‑inch side (red side) of the adapter.

2 Push the other end of the nipple into the air input port on the Microplate Labeler.

3 Push the 6‑mm tubing into the blue side of the adapter.

> **CAUTION** Attempting to use tubing that has a different diameter can damage the adapter.

4 Gently pull on the air tubing to ensure that the assembly is connected properly.

Related topics

| For information about...	See...
How to install the device	"Installation workflow" on page 32
Site requirements for installation	"Laboratory requirements" on page 33
How to connect air tubing for North America	"Connecting the air tubing: non‑metric" on page 38
Setting the air pressure	"Setting the air pressure" on page 42
Disconnecting air supply	"Disconnecting the air tubing" on page 163
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Setting the air pressure

About this topic

This topic describes how to set the air pressure after connecting the air tubing to the Microplate Labeler.

Procedure

To set the air pressure:

1 Turn on the air supply to the Microplate Labeler.

Depending on your lab configuration, the mechanism for turning on the air supply might be a pressure regulator located on the wall or on a compressed air cylinder, or a toggle switch on the air line. The air supply to the Microplate Labeler should be in the range of 0.55 MPa (80 psi) to 0.58 MPa (85 psi).

2 To adjust the internal air-pressure regulator on the Microplate Labeler:

a On the back of the applicator, pull out the pressure regulator knob until you feel a click.

b While watching the pressure gauge, turn the knob to increase or decrease the pressure so that the gauge reads in the following range:

0.55 MPa (80 psi) to 0.58 MPa (85 psi)

c Push the knob back in.

Figure Connection panel: air pressure gauge (top) and pressure regulator knob (bottom)
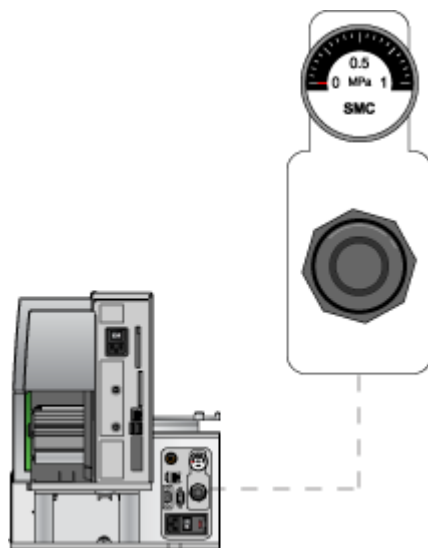
IMPORTANT Check the air pressure after using the Microplate Labeler for the first time to make sure the air pressure setting is correct.

Related topics

For information about...	See...
How to install the device	"Installation workflow" on page 32
Site requirements for installation	"Laboratory requirements" on page 33
Connecting the air tubing	"Connecting the air tubing: non-metric" on page 38
	"Connecting the air tubing: metric" on page 40
Disconnecting air supply	"Disconnecting the air tubing" on page 163
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Connecting the power cord

About this topic

This topic explains how to connect the Microplate Labeler to a power source.

Before you start

⚠ **WARNING**   **The Microplate Labeler has moving parts. Keep clothing, hair and jewelry away from it at all times.**

Procedure

To install the power cord:

1   On the back of the Microplate Labeler applicator, ensure that the power switch is set to **off** (**o**).

Figure   Connection panel: AC power port and power switch
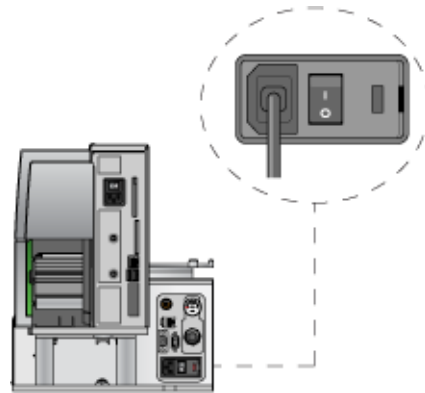
2   Plug one end of the power cord into the AC power port on the connection panel.

3   Plug the other end of the power cord into an appropriate, grounded electrical socket.

Later, after you connect the computer, you will start up the device.

Related topics

For information about...	See...
Connecting the computer	"Connecting the Microplate Labeler to the computer" on page 45
Turning on the device	"Starting up and shutting down" on page 60
How to install the device	"Installation workflow" on page 32
Site requirements for installation	"Laboratory requirements" on page 33
Connection panel	"Microplate Labeler connection panel (back view)" on page 14
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Connecting the Microplate Labeler to the computer

About this topic

This topic describes how to connect the computer to the Microplate Labeler using either of the following:

- Ethernet connection (recommended)
- Serial connection

Using an Ethernet connection

You can use Ethernet to connect a Microplate Labeler to the computer:

- Directly
- Through an Ethernet switch

If you are setting up a standalone Microplate Labeler, you can use either method. If you are setting up a local area network (LAN) that has other devices on it, use an Ethernet switch.

The Automation Solutions configured computer has two Ethernet ports:

- *Port for the add-on Ethernet card.* Configured for a static address. You connect the Microplate Labeler to the port configured for a static address.
- *Port for the computer's built-in Ethernet card.* Configured for a dynamic address. You can use this port to connect to your company network.

Connecting directly to the computer

A red crossover Ethernet cable is provided for connecting the computer directly to the Microplate Labeler (without a switch or hub.) This communication cable is used when a single Microplate Labeler is directly connected to a single host computer, where no other robots or devices must interact or communicate.

To connect directly to the computer using Ethernet:

1 On the Microplate Labeler connection panel, connect one end of the red crossover Ethernet cable to the Ethernet port.

2 Connect the other end of the cable to the Ethernet port of the computer.

Figure   Connection panel: Ethernet connection
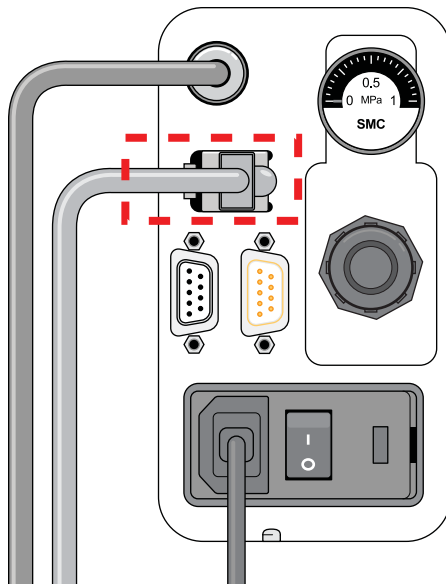
Connecting through an Ethernet switch

An Ethernet switch connects the single cable from the computer to one or more cables that lead to one or more devices.

IMPORTANT   Do not use the red crossover cable with an Ethernet switch. The switch performs the crossover function.

If you are adding the Microplate Labeler to an existing LAN, step 1 of the following procedure should already be done.

To connect through an Ethernet switch:

1 Connect the switch to the computer as follows:

    a Connect the power cord to the switch.

    b Connect one end of the Ethernet cable (black) into any Ethernet port on the switch, and connect the other end of the cable to an Ethernet port on the computer.

2 Connect the Microplate Labeler to the switch as follows:

    a Connect one end of a second Ethernet cable to a port on the Ethernet switch.

    b Connect the other end of the cable to the Ethernet port on the Microplate Labeler.

Connecting additional devices

You can connect additional Microplate Labelers to the network through the switch.

Each Microplate Labeler requires an additional profile.

IMPORTANT   Before connecting multiple Microplate Labeler devices on the same network, contact Automation Solutions Technical Support for guidance on setting the IP addresses.

About configuring the computer's network card (Ethernet only)

The Automation Solutions configured computer is already set up to communicate with the Microplate Labeler. No change to the network card IP address is required.

If you are using a computer other than an Automation Solutions configured computer, make sure the value of the network card IP address and subnet mask are as follows:

- IP address: 192.168.0.1
- Subnet mask: 255.255.255.0

If your computer will be connected to your LAN, make sure the computer has a second network card. The second network card can have a dynamic IP address.

Using a serial connection

If you are connecting a single Microplate Labeler to a computer, you can use a serial connection.

> **CAUTION**   Using serial connections to connect more than one Microplate Labeler to the same computer can cause problems with the barcode label formats.

To use a serial connection:

1 Connect one end of the supplied RS-232 DB-9 serial cable (beige) to a COM port on the computer.

> **IMPORTANT**   The serial cable is a straight-through, pin-to-pin cable. Make sure you are not using a serial null-modem cable, which may look identical but will prevent proper communication with the Microplate Labeler.

2 Connect the other end of the cable to the serial port on the Microplate Labeler connection panel.

Figure Connection panel: serial connection
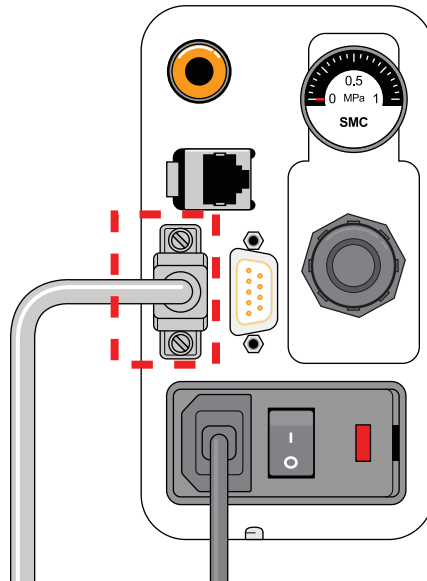
Related topics

For information about...	See...
Changing the IP settings on a computer and on the Microplate Labeler	Automation Solutions Technical Support
How to install the device	"Installation workflow" on page 32
Site requirements for installation	"Laboratory requirements" on page 33
Connection panel	"Microplate Labeler connection panel (back view)" on page 14
Safety	"Safety guidelines" on page 1
How to report a problem	"Reporting problems" on page 176

Installing the automation control software

About this topic

The Microplate Labeler ships with one of the following software CDs:

- *VWorks software*. For details on installing and setting up the VWorks software, see the *VWorks Automation Control Setup Guide*.

Note: If you use the computer provided with your lab automation system or workstation, the VWorks software is already installed.

• *BenchWorks software.* For details on the BenchWorks software, see the *BenchWorks Automation Control User Guide*.

   Note: If you use the computer provided with the workstation, the BenchWorks software is already installed.

• *PlateTag software.* If you are setting up a standalone device or as a device integrated with a third-party lab automation system, install the PlateTag software as described in the following procedure.

This topic describes how to install the PlateTag software.

Before you begin

Ensure the computer meets the specified requirements. See "Computer requirements" on page 35.

Procedure for installing PlateTag software

To install the PlateTag software:

1 Insert the Microplate Labeler CD into the computer CD-ROM drive. The software installer should start automatically.

   If installer does not start, in Microsoft Windows, navigate to the CD-ROM drive, and then double-click **setup.exe**.

2 Follow the instructions that appear on the screen.

   Unless you select a different location, the PlateTag software and a PDF of the user guide install in the following folder:

   C:\Program Files\Agilent Technologies\Microplate Labeler

Related topics

For information about...	See...
How to install the device	"Installation workflow" on page 32
Computer requirements	"Computer requirements" on page 35
VWorks software	• *VWorks Automation Control Setup Guide* • *VWorks Automation Control User Guide*
BenchWorks software	*BenchWorks Automation Control User Guide*
How to report a problem	"Reporting problems" on page 176

Loading labels and ribbon

About this topic

This topic describes how to load labels and ribbon in the Microplate Labeler printer.

After you load the labels and ribbon, perform several print-and-apply tests to ensure that the labels are printing correctly and that the vacuum pads on the applicator head can pick the labels off of the label backing.

Before you begin

Ensure that you have the G5404B Microplate Labeler Media Kit from Agilent Technologies. The kit contains a one-to-one quantity of ribbon and labels so that you can replace them at the same time. The kit contents are:

• Roll of labels (6,500)

• Thermal transfer ribbon

• Empty ribbon core (functions as a spool to rewind the used ribbon)

• Cleaning pen

For ordering information, go to the following web site:
www.agilent.com/lifesciences/automation

⚠ **WARNING**   **The printhead can be hot after use. Allow the printhead to cool before changing the ribbon.**

Open the printer cover to gain access for loading the labels and ribbon.

Figure   Printer (side view) showing the feed paths of the ribbon (red) and labels (blue)
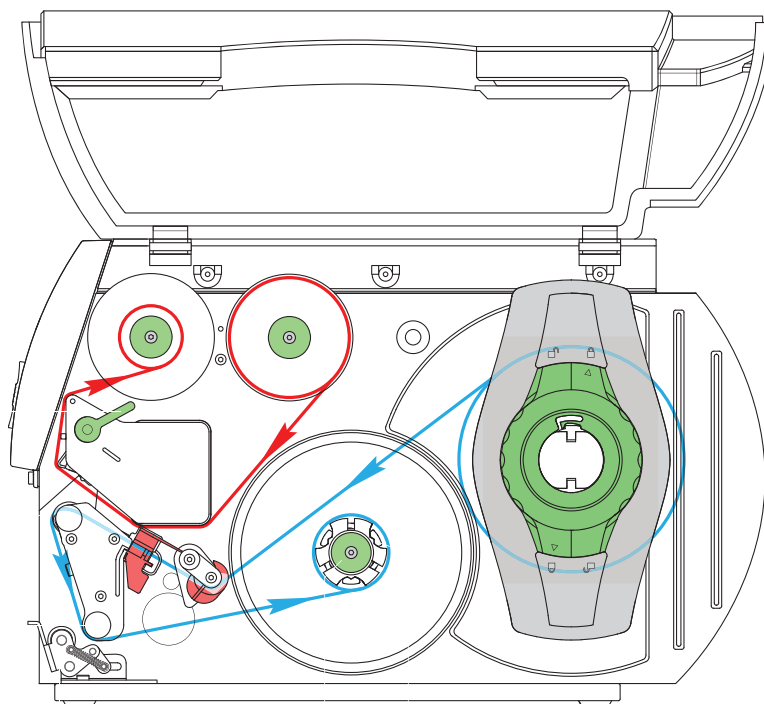
Removing the used ribbon

See the following figure for the component locations referenced in the procedure.
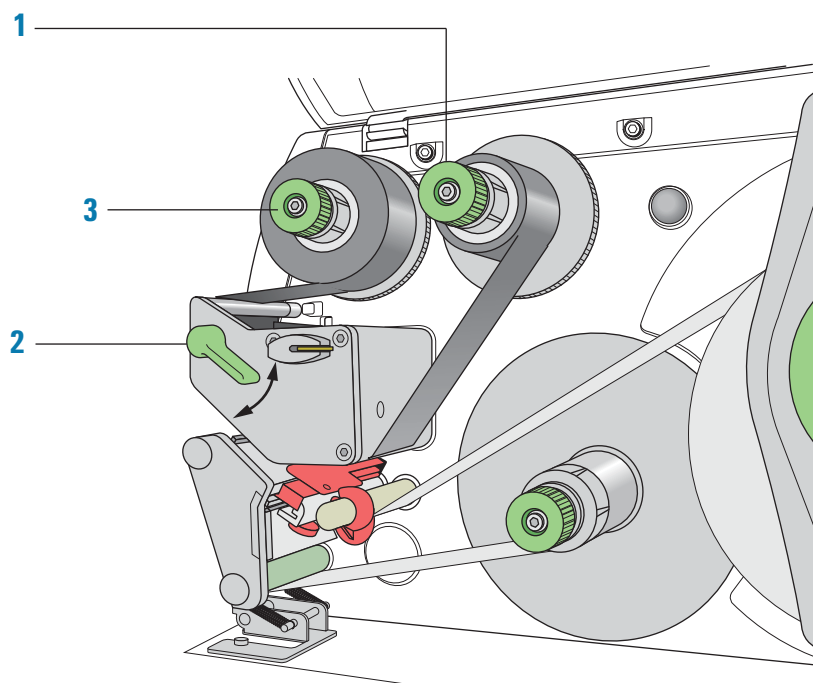
To remove the used ribbon:

1 While firmly grasping the ribbon supply hub (**1**), turn the green knob clockwise 🔘⤵ to contract the hub and loosen the empty roll. Slide the roll off of the hub.

2 Lift the printhead lever (**2**) counterclockwise to lift the printhead.

3 While firmly grasping the take-up hub (**3**), turn the green take-up knob clockwise 🔘⤵ to contract the hub and loosen the used roll of ribbon. Slide the used roll off of the take-up hub.

4 Lift the remaining ribbon out of the printer.

IMPORTANT   Clean the printhead before loading the new ribbon. See "Cleaning the printer components" on page 155.

Loading the new ribbon

See the following figure for the component locations referenced in the procedure.
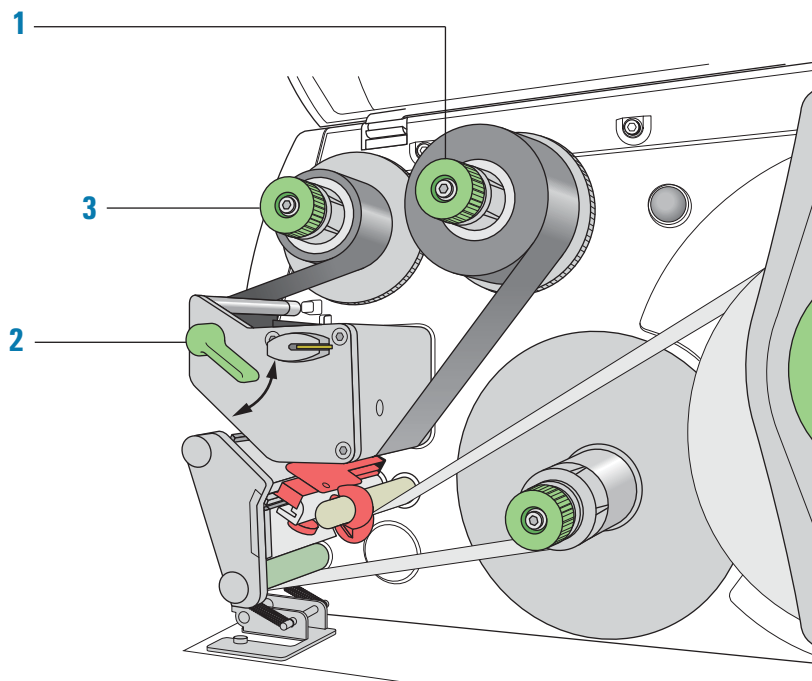
To load new ribbon:

1 Install the new ribbon roll on the supply hub (**1**) as follows:

   a While firmly holding the supply hub, turn the green knob clockwise ⊙ to contract the hub. Slide the new ribbon roll onto the hub until it is flush against the printer. Ensure the ribbon feeds clockwise with the coating facing downward when being unwound.

   b While firmly holding the hub, turn the green knob counterclockwise ⊙ to expand the hub and secure the ribbon roll.

2 Ensure the printhead lever (**2**) is up to lift the printhead, and then guide the ribbon under and around the printhead.

> ⚠ **WARNING** **The printhead can be hot after use. Allow the printhead to cool before changing the ribbon. The printhead is the narrow bar that presses the image through the ribbon and onto the label as the media move onto the print roller.**

> **CAUTION** Do not touch the protective glass layer of the printhead with your fingers. A dirty printhead will result in a poor print image.

3 Feed the ribbon onto an empty core on the take-up hub (**3**) as follows:

   a While firmly holding the take-up hub, turn the green knob clockwise ⊙ to contract the hub. Slide an empty ribbon core onto the hub until it is flush against the printer.

b While firmly holding the hub, turn the green knob counterclockwise to expand the hub and secure the ribbon core.

c Guide the ribbon under and then over the take-up hub so that it winds counterclockwise. Use adhesive tape to secure the end of the ribbon to the ribbon core. Make sure the edge of the ribbon is flush with the core against the printer.

4 Turn the ribbon take-up hub (**3**) counterclockwise to smooth out the ribbon slack.

If you are also loading labels, continue to the next procedure. If you are finished loading all media, turn the printhead lever (**2**) clockwise to lower the printhead.

Removing a used label roll

See the following figure for the component locations referenced in the procedure.
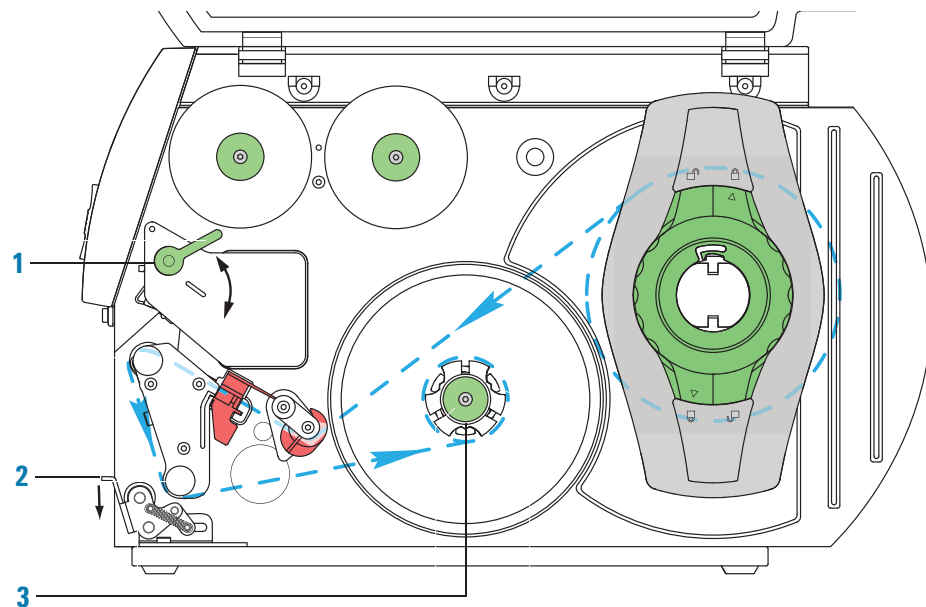
To remove a used label roll:

1 If the printhead is not already in the up position, lift the printhead lever (**1**) counterclockwise to lift the printhead.

2 Push down on the pinch-roller lever (**2**) to release the label strip.

3 Cut the used label strip, and wind it fully around the rewinder (**3**).

4 While firmly holding the rewinder (**3**), turn the green knob clockwise to contract the rewinder and release the wound roll.

5 Remove the wound roll.

Note: You will remove the empty label core when you install the new label roll in the following procedure.

Loading the new labels

You install the labels in three basic steps:

Step	For this task…
1	Install the label roll on the roll retainer.
2	Feed the label strip under the printhead.
3	Secure the label strip to the rewinder.

Step 1. Installing the label roll on the roll retainer
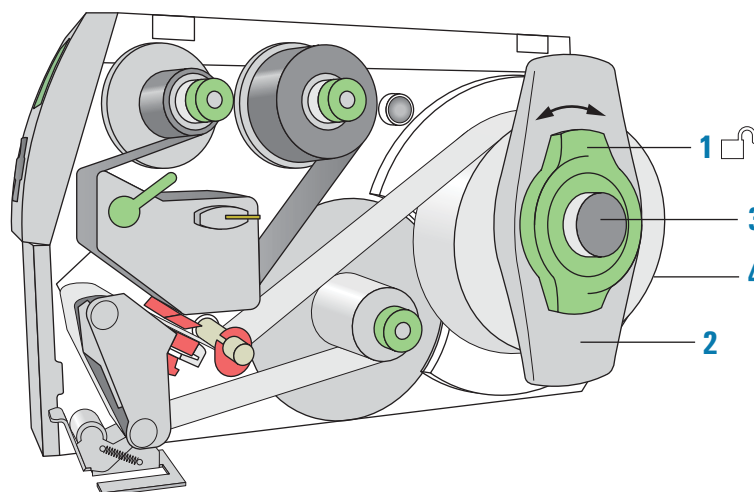
To install the label roll on the roll retainer:

1 Turn the green locking ring (**1**) counterclockwise, so that the arrow points

to ⬚.

2 Remove the margin stop (**2**).

3 On the roll retainer (**3**), load the new label roll so that it feeds counterclockwise with the label side up.

4 Reposition the margin stop (**2**) on the roll retainer (**3**).

5 While firmly pushing the margin stop against the label roll (**4**), turn the

green locking ring (**1**) clockwise, so that the arrow points to 🔒 , securing the label roll in position.

IMPORTANT To ensure the roll feeds properly and label presentation is repeatable, the margin stop must be firmly in place against the label roll.

Step 2. Feeding the label strip under the printhead
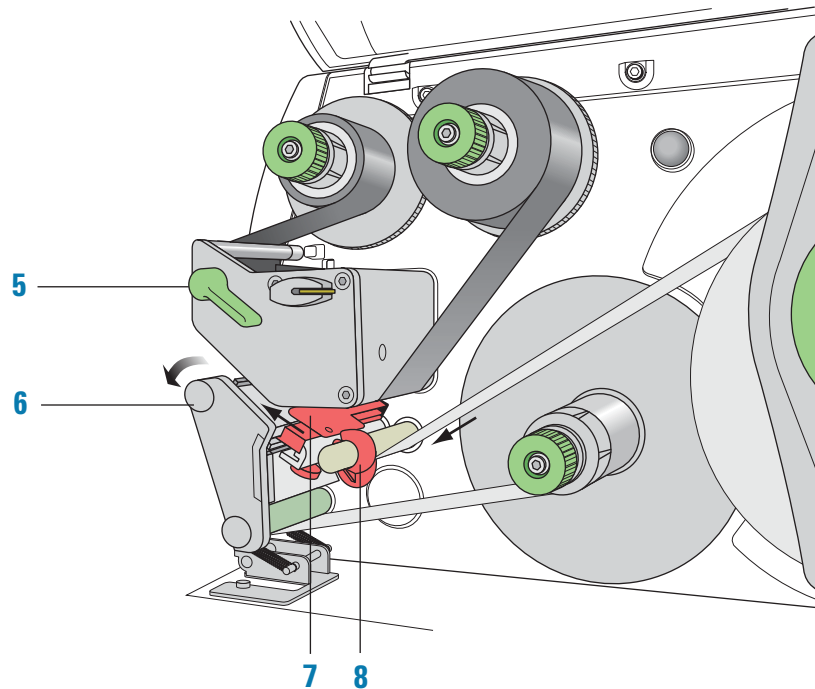
To feed the label strip through the printhead:

1 Turn the printhead lever (**5**) counterclockwise to lift the printhead.

2 Slide the red guide ring (**8**) to the end of the axis bar.

3 Guide the label strip below the axis bar and through the label sensor (**7**) so that the label strip exits the print unit between the printhead and the print roller (**6**).

4 Push the guide ring (**8**) on the axis bar against the outer edge of the label strip.

Step 3. Securing the label strip to the rewinder
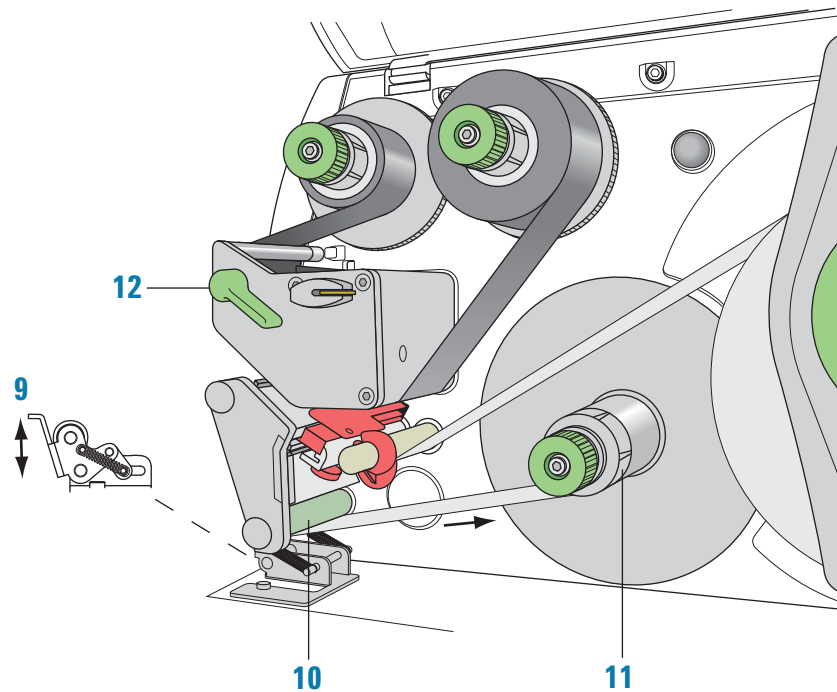
To secure the label strip to the rewinder:

1 Push down on the pinch-roller lever (**9**) to lift the pinch roller off the rewind assist roller.

2 Guide the label strip down and under the rewind assist roller (**10**) toward the rewinder (**11**).

3 While holding the rewinder (**11**) firmly, turn the green knob clockwise until it stops.

4 Insert the label strip under the three brackets on the rewinder (**11**), and turn the green knob counterclockwise until it stops. The rewinder is fully expanded, gripping the label strip firmly.

The inside edge of the label strip should be flush against the printer.

5 Turn the rewinder (**11**) counterclockwise to tighten the label strip.

6 Push up on the pinch-roller lever (**9**) to position the pinch roller into position on the rewind assist roller.

7 Turn the printhead lever (**12**) clockwise to lower the printhead into position.

After you finish loading new ribbon and labels

Use Microplate Labeler Diagnostics to run a print-and-apply test and verify that the labels print correctly and the applicator head can pick up the labels from the printer.

Optionally, you can reset the label counter in the I/O Functions tab to track the number of labels used.
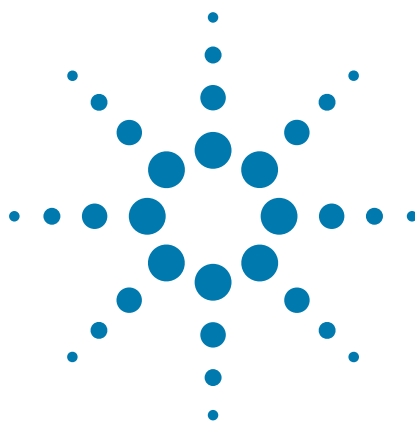
Related topics

For information about...	See...
Performing a print-and-apply test	"Performing a print-and-apply test" on page 146
Resetting the label counter	"Resetting the label counter in the Diagnostics software" on page 157
Cleaning the printhead and print roller using the cleaning pen	"Cleaning the printer components" on page 155
Routine printer maintenance	"Routine maintenance" on page 142
Reporting problems	"Reporting problems" on page 176

4
Setting up the Microplate Labeler

This chapter describes how to perform the initial set up of the Microplate Labeler.

The topics are:

Agilent Technologies

Starting up and shutting down

About this topic

This topic describes how to start up and shut down the Microplate Labeler.

Starting up the Microplate Labeler

IMPORTANT   Follow the steps in the order shown to establish communication with the Microplate Labeler.

To start up a Microplate Labeler

1   Turn on the air supply.

2   On the Microplate Labeler connection panel, check the air pressure gauge (see figure, **1**). Verify the air pressure is set within the following range:

0.55 MPa (80 psi) to 0.58 MPa (85 psi)

Figure   Connection panel showing Ethernet connection
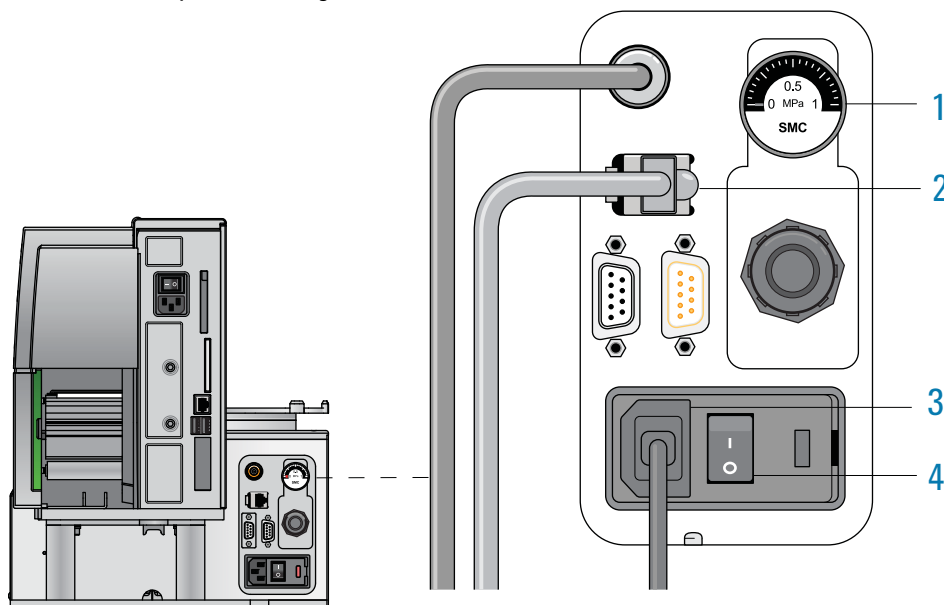
3   Verify that the communication cable (**2**) and power cord (**3**) are connected, but do not turn on the power yet.

Note: The figure shows an Ethernet connection. If you are using serial communication, the serial cable connects to the serial port. For more details, see "Connecting the Microplate Labeler to the computer" on page 45.

4   If you are using an Ethernet switch, turn on the power to the Ethernet switch.

5   Turn on the computer and the monitor, and wait for the computer to boot up.

6   On the connection panel, press the power switch (**4**) to the **on** (**|**) position.

> ⚠️ **WARNING** **The device components can move when you turn on the power and the air. Keep fingers, hair, clothing, and jewelry away from the Microplate Labeler while it is in motion. Never touch any of the moving parts or attempt to move labware while the Microplate Labeler is in operation. The device could pinch, pierce, or bruise you.**

IMPORTANT Ensure that the power switch on the printer remains in the **on** (|) position.

7 To start the automation control software, click the shortcut icon for the software on the Microsoft Windows desktop.

Alternatively, choose **Start > All Programs > Agilent Technologies >** *software name*.

To establish communication with the Microplate Labeler, see the topic for your software:

- For the VWorks software, see "VWorks software—establishing communications with the device" on page 65.
- For the BenchWorks software, see "BenchWorks—establishing communications with the device" on page 70.
- For the PlateTag software, see "PlateTag software—establishing communications with the device" on page 73.

Shutting down the Microplate Labeler

Shut down the Microplate Labeler before you:

- Install a barcode reader
- Perform maintenance on or clean the Microplate Labeler
- Move the Microplate Labeler

To shut down the Microplate Labeler:

1 Exit the automation control software.

2 Shut down the computer and turn off the monitor.

3 On the Microplate Labeler connector panel, press the power switch to the **off (o)** position.

4 Turn off the air supply.

Related topics

For information about...	See...
Hardware components	"Hardware overview" on page 12
Establishing communication with the Microplate Labeler	• "VWorks software—establishing communications with the device" on page 65 • "BenchWorks—establishing communications with the device" on page 70 • "PlateTag software—establishing communications with the device" on page 73

For information about...	See...
Designing the label formats	"Creating label formats" on page 91
Setting up and running a labeling protocol in the VWorks software	*VWorks Automation Control User Guide*
Setting up and running a labeling protocol in the BenchWorks software	*BenchWorks Automation Control User Guide*
Setting up a PlateTag print job	"PlateTag–Running a print job" on page 113
Troubleshooting problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

VWorks or BenchWorks—setup workflow for integrated device

About this topic

This topic provides an overview of the procedures required to set up the Microplate Labeler after the device has been installed. If the Microplate Labeler is being set up for the first time, use the workflows described below. If the device is part of an integrated Agilent Technologies laboratory automation system, the setup has already been performed, and additional setup should not be required.

Setup workflow for integrated device

The following workflow describes the steps for initial setup of a Microplate Labeler when it is integrated in a lab automation system.

Note: If the Microplate Labeler is integrated in a third-party lab automation system, the third-party software controls the device via the Microplate Labeler ActiveX interface. See "Microplate Labeler ActiveX control" on page 205. For additional information see the third-party system documentation. For assistance, contact Automation Solutions Technical Support.

Step	For this task...	See...
1	Establish communication with the Microplate Labeler: **a** In the software, add the Microplate Labeler device and select the profile. **b** Initialize the device.	The related topic for your software: • "VWorks software—establishing communications with the device" on page 65 • "BenchWorks—establishing communications with the device" on page 70
2	Start Microplate Labeler Diagnostics.	"Opening Microplate Labeler Diagnostics" on page 75
3	If necessary, edit the profile or create a new one.	"Creating and managing profiles" on page 77
4	Perform a print and apply test.	"Performing a print-and-apply test" on page 146
5	If necessary, adjust the vertical plate stage height.	"Setting the plate stage vertical positions" on page 84
6	Verify the teachpoint for the robot pickup angle. If required, edit the teachpoint and update the profile.	"Setting the robot pickup angle teachpoint" on page 88
7	Perform a print and apply test.	"Performing a print-and-apply test" on page 146

Step	For this task...	See...
8	To set up additional Microplate Labeler devices, perform steps 2 through 8 for each additional device.	–
	Note: You must create a profile with an appropriate Ethernet or serial setting for each device.	

After the device setup is completed, you are ready to:

- Design your label formats
- Set up the a labeling protocol in VWorks (Print and Apply task) or BenchWorks (Apply Label task).

Related topics

For information about...	See...
Designing label formats	"Creating label formats" on page 91
Creating and running a labeling protocol in the VWorks software	*VWorks Automation Control User Guide*
Creating and running a labeling protocol in the BenchWorks software	*BenchWorks Automation Control User Guide*
Setup workflow for a standalone device	"PlateTag–setup workflow for standalone device" on page 72
Starting up the device	"Starting up and shutting down" on page 60
Reporting problems	"Reporting problems" on page 176

VWorks software—establishing communications with the device

About this topic

Read this topic if you are an administrator responsible for managing Agilent Technologies devices that are running the VWorks software. This topic describes how to add and delete new Microplate Labeler devices in the VWorks software.

The VWorks software uses the information in a device file to communicate with and operate devices within the lab automation system.

- *If your computer was configured by Automation Solutions.* The correct device configuration is already set up for communication with the Microplate Labeler. You are not required to create a new Microplate Labeler device in the software unless you want to reference different profiles. To establish communication, you must initialize the device.

- *If you configured your own computer.* You must add a device in the VWorks software for each Microplate Labeler in the system.

For detailed information about device files and associations with profiles, teachpoints, and labware definitions, see the *VWorks Automation Control User Guide*.

Devices and device files defined

A device is an item in your lab automation system that has an entry in a VWorks software device file. A device can be a robot, an instrument, or a location in a lab automation system that can hold a piece of labware.

The device file (*.dev) stores information for all the devices in an integrated system, including:

- Type of device (for example, Microplate Labeler device)
- Device configuration information (for example, approach height, allowed or prohibited labware, and so on)
- Profile to use

Creating a device file

If you are setting up the Microplate Labeler for the first time, you will create a device file. You add the Microplate Labeler device and the external devices to the device file.

To create a device file:

1 Log in to the VWorks software as an Administrator.

2 In the **VWorks** window, choose **File** > **New** > **Device.**

A Device File tab appears in the **VWorks** window.

3 Choose **File** > **Save**. In the **Save As** dialog box, type a file name (*.dev), select the following storage location, and click **Save**:

...\VWorks Workspace\Device Files
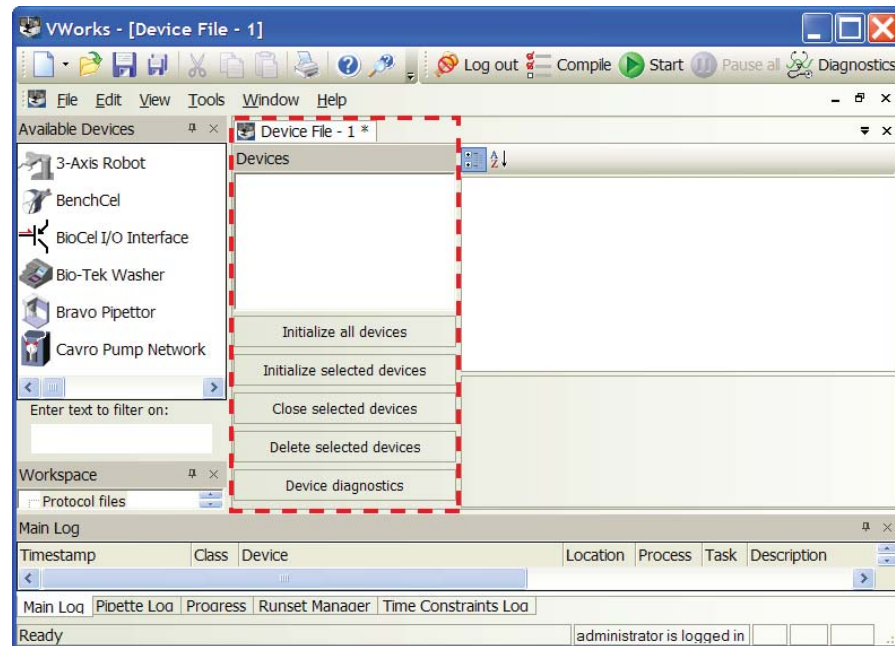
Adding the Microplate Labeler to a device file

Before you begin:

- Ensure that any devices are physically networked to the computer.
- Turn on the devices.

To add devices to a device file:

1   In the **VWorks** window, verify that the correct device file is open.

To open a device file, choose **File** > **Open**. In the **Open** dialog box, select your device file (*.dev), and then click **Open**. The device files should be stored in the following location:

...\VWorks Workspace\Device Files

2   In the **Available Devices** area, double-click the **Microplate Labeler** icon. Or, drag the **Microplate Labeler** icon to the **Device File** tab.

Note: To show or hide the list of available devices, choose **View > Available Devices**.
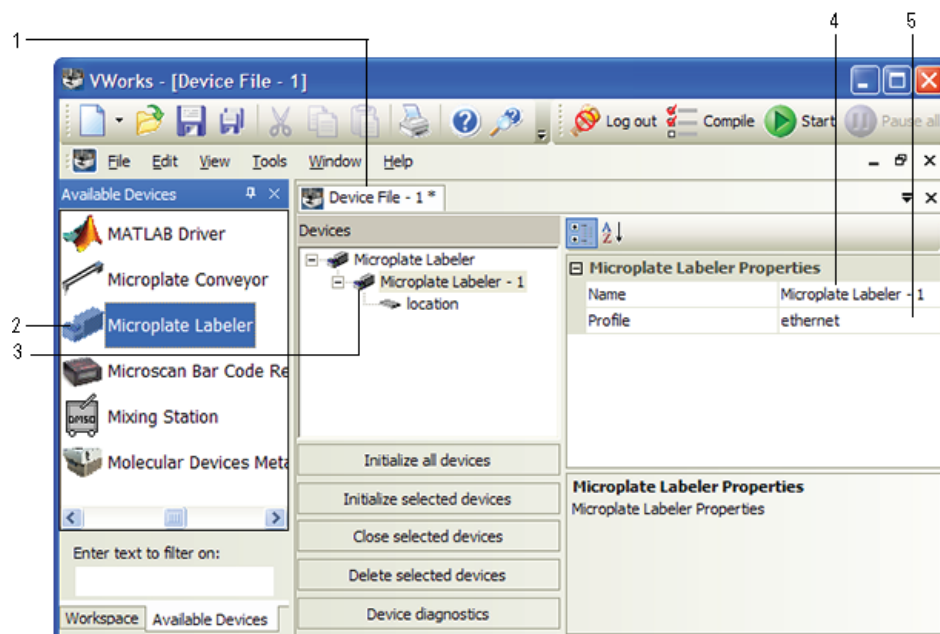
3   In the **Device File** tab, select the **Microplate Labeler-***n* icon.

4   Under **Microplate Labeler Properties**, type a **Name** for the device. By default, the software assigns Microplate Labeler-*n*, and increments the number for each Microplate Labeler device that you add.

To identify the specific Microplate Labeler, the device name should include the device serial number.

5   In the **Profile** list, select a profile for the device.

If the **Profile** list is empty, open Diagnostics and create a profile. Then return to the **Profile** list under **Microplate Labeler Properties** and select the new profile.

IMPORTANT   To use different configurations of the same device in different protocols, you can save time by creating a different device file for each configuration. For example, if you change a pipette head on a pipettor, you can simply open the device file that contains the device with the appropriate profile instead of editing the profile selection in the device file.

6   On the **Device File** tab, under the **Microplate Labeler** device icon, click the **location** icon. The corresponding properties appear.
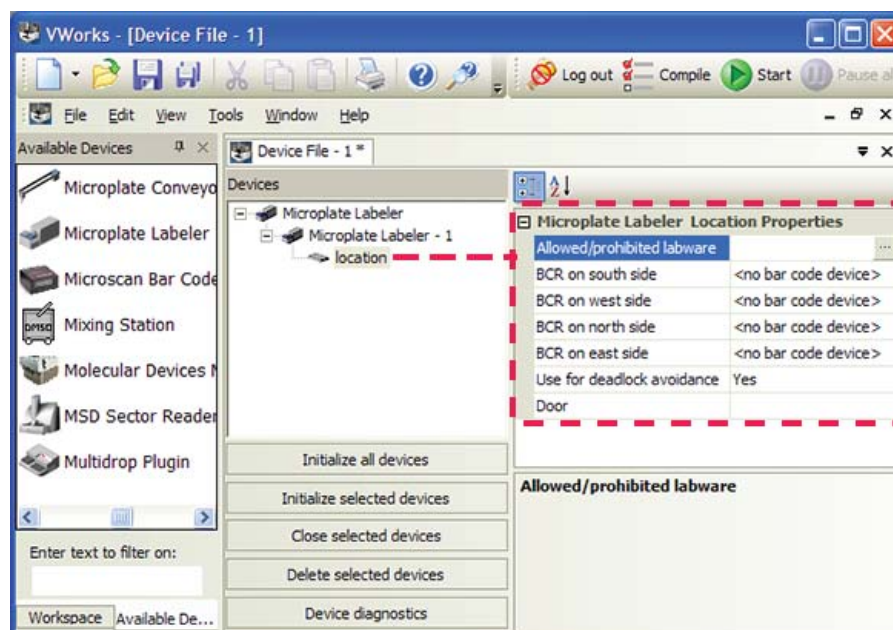
Set the desired values for the following properties. Use the default values for the remaining properties.

Property	Description
Allowed/prohibited labware	*Optional.* Click [...] if you want to specify labware restrictions for this location. The Allowed/prohibited labware dialog box appears. For details on the labware classes, see the *VWorks Automation Control Setup Guide*. *Note:* If the [...] button is not visible, click the empty field.

7   Select **File** > **Save**.

If you are creating a new device file, the Save As dialog box appears so that you can specify a name and location for your device file. Ensure the file type is ***.dev**.

Alternatively, you can select **File** > **Save All** to save the device file and the current protocol file at the same time.

Initializing the Microplate Labeler in the VWorks software

To initialize the Microplate Labeler in the VWorks software:

1   In the **VWorks** window, ensure that the device file is open and the Microplate Labeler device icon appears in the **Devices** area.

2   In the **Devices** area, select the Microplate Labeler device, and then click **Initialize selected devices**.

When communication is established, the plate stage of the Microplate Labeler homes. If communication is not established, select another profile or open Microplate Labeler Diagnostics and modify the profile if necessary. See "Creating and managing profiles" on page 77.

Related topics

For information about...	See...
Setup workflow	"VWorks or BenchWorks—setup workflow for integrated device" on page 63
Profiles	"Creating and managing profiles" on page 77
Designing label formats	"Creating label formats" on page 91
Running a labeling protocol	*VWorks Automation Control User Guide*
Troubleshooting communications problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

BenchWorks—establishing communications with the device

About this topic

Read this topic if you are an administrator in charge of managing a Microplate Labeler integrated with a BenchCel Workstation that is running the BenchWorks software.

The BenchWorks software uses the information in a device file to communicate with and operate all the devices in the BenchCel Workstation. If you are adding a new Microplate Labeler to a workstation, you must add a new Microplate Labeler device to the device file.

For detailed information about device files and associations with profiles, teachpoints, and labware definitions, see the *BenchWorks Automation Control User Guide*.

Adding the Microplate Labeler device to a BenchWorks device file

To add the Microplate Labeler to a device file:

1 Ensure that the Microplate Labeler is physically networked to the computer and turned on.

2 Start the BenchWorks software and login as an Administrator.

3 In the **BenchWorks** window, do one of the following:

- If you have an existing device file that you want to add to, select **File > Device File**, click **Open**, and select your device file.

- If you are creating a new device file, **File > Device File**, and click **New**.

4 Click the **Device Manager** tab.

5 In the **Device List** area, click **New device**, and enter a name for the device you are adding.

6 In the **Device Properties** area, click **Device type**, and then select the Microplate Labeler.

7 In the **Device Properties** area, click **Profile name**, and then select the profile you want to use.

8 Select **File > Device File > Save**.

If you are creating a new device file, you are prompted to enter a name for your device file.

Initializing the Microplate Labeler in the BenchWorks software

To initialize the Microplate Labeler in the BenchWorks software:

1 In the **BenchWorks** window, ensure that the device file is open and the Microplate Labeler device icon appears in the **Device List** area.

2 In the **Device List** area, click **Initialize all devices**.

When communication is established, the plate stage of the Microplate Labeler homes. If communication is not established, select another profile or open Microplate Labeler Diagnostics and modify the profile if necessary. See "Creating and managing profiles" on page 77.

Related topics

For information about...	See...
Setup workflow	"VWorks or BenchWorks—setup workflow for integrated device" on page 63
Profiles	"Creating and managing profiles" on page 77
Designing label formats	"Creating label formats" on page 91
Running a labeling protocol	*BenchWorks Automation Control User Guide*
Troubleshooting communications problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

PlateTag—setup workflow for standalone device

About this topic

This topic provides an overview of the procedures required to set up the Microplate Labeler after the device has been installed.

Setup workflow for a standalone device using PlateTag

The following workflow describes the steps for initial setup of the Microplate Labeler when it is used as a standalone device.

Step	For this task...	See...
1	Establish communications with the Microplate Labeler.	"PlateTag software—establishing communications with the device" on page 73
2	Manually place a microplate on the plate stage.	"Placing a microplate on the plate stage" on page 80
3	Perform a print and apply test.	"Performing a print-and-apply test" on page 146
4	If necessary, adjust the vertical plate stage height.	"Setting the plate stage vertical positions" on page 84
5	If you have adjusted the vertical plate stage height, perform a print and apply test.	"Performing a print-and-apply test" on page 146

After the device setup is completed, you are ready to:
- Design your label formats
- Set up the a print job in PlateTag.

Related topics

For information about...	See...
Designing label formats	"Creating label formats" on page 91
Running a print job	"PlateTag—Running a print job" on page 113
ActiveX control	"Microplate Labeler ActiveX control" on page 205
Setup workflow for an integrated device	"VWorks or BenchWorks—setup workflow for integrated device" on page 63
Starting up the device	"Starting up and shutting down" on page 60

For information about...	See...
Reporting problems	"Reporting problems" on page 176

PlateTag software—establishing communications with the device

About this topic

This topic explains how to establish communication with the Microplate Labeler by selecting a profile from PlateTag.

Connecting to the Microplate Labeler

To connect to the Microplate Labeler:

1 Start the PlateTag software.

On the **Windows** desktop, click the **PlateTag** shortcut icon, or choose **Start > Programs** or **All Programs** > **Agilent Technologies** > **Microplate Labeler** > **PlateTag**.

2 In the **Print Job** page, under **Device Selection,** select the profile that corresponds to the Microplate Labeler you want to use.

If this is the first time you are connecting to the Microplate Labeler, select one of the profiles (Ethernet or serial) that matches how you have connected your Microplate Labeler to the controlling computer.
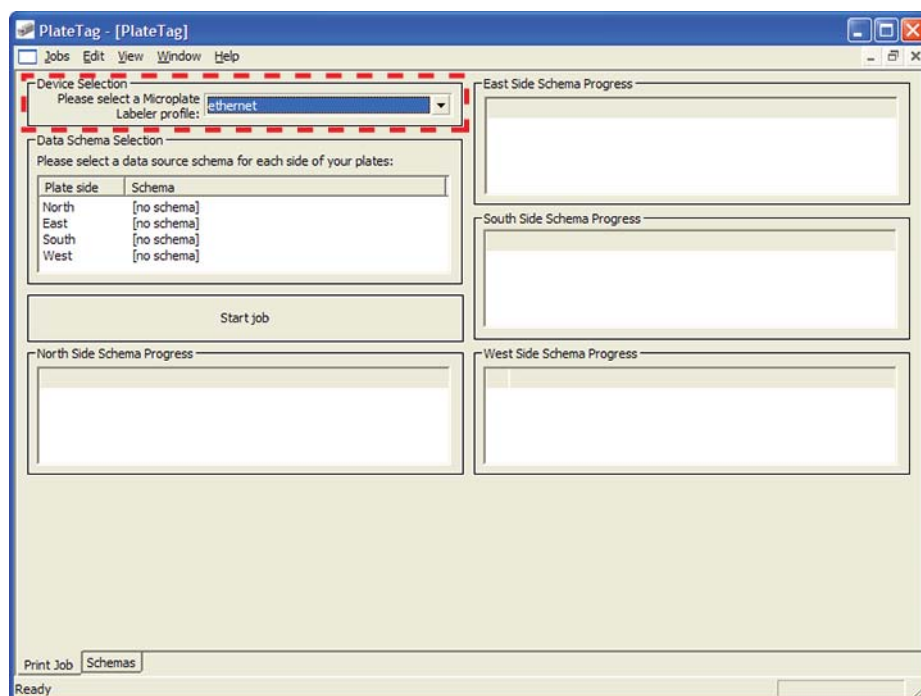
Communications is established when you do one of the following:

- Open Microplate Labeler Diagnostics
- Start a print job

When communication is established, the plate stage of the Microplate Labeler homes. If communication is not established, select another profile or open Microplate Labeler Diagnostics and modify the profile, if necessary. See "Creating and managing profiles" on page 77.

Related topics

For information about…	See…
Setup workflow	"PlateTag–setup workflow for standalone device" on page 72
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Changing an existing Microplate Labeler profile	"Creating and managing profiles" on page 77
Designing label formats	"Creating label formats" on page 91
Starting a print job	"PlateTag–Running a print job" on page 113
Troubleshooting communications problems	"Troubleshooting hardware problems" on page 167

Opening Microplate Labeler Diagnostics

About this topic

You use Microplate Labeler Diagnostics to set up and troubleshoot the device. This topic describes how to open Microplate Labeler Diagnostics from the VWorks software, BenchWorks software, and PlateTag software.

Note: For information on how to access Microplate Labeler Diagnostics using the ActiveX control, see .

Figure   Microplate Labeler Diagnostics
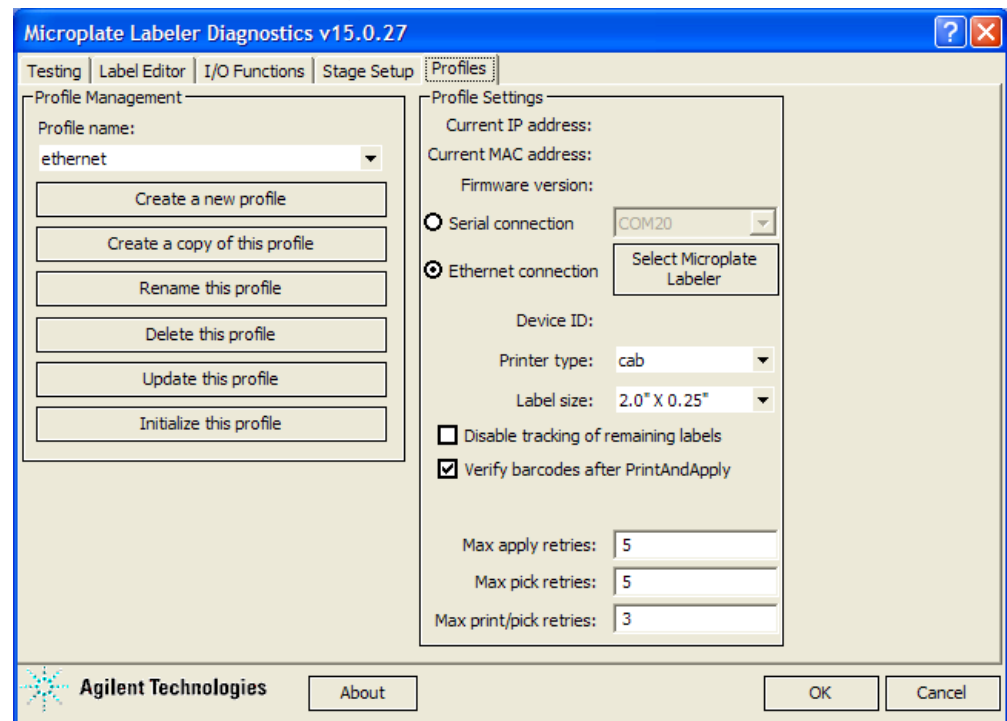
VWorks procedure

To open Microplate Labeler Diagnostics from the VWorks software:

1   In the **VWorks software** window, ensure the correct device file is open.

To open a device file, choose **File > Open**, and then select the appropriate device file (*.dev) in the **Open** dialog box.

2   In the **Devices** area of the opened device file tab, highlight the device icon, and then click **Device diagnostics**.

Alternatively, you can double-click the device icon.

The Microplate Labeler Diagnostics window appears.

BenchWorks procedure

To open Microplate Labeler Diagnostics from BenchWorks:

1   In the **BenchWorks** window, ensure the correct device file is open.

2   Click the **Device Manager** tab.

3   In the **Device List** area, select the Microplate Labeler. Expand the general name of the device, if necessary.

4   At the bottom of the **Device List** area, click **Device diagnostics**.

The Microplate Labeler Diagnostics window appears.

PlateTag procedure

To start Microplate Labeler Diagnostics from PlateTag software:

1   In the **PlateTag** window, choose **View** > **Diagnostics**.

The Microplate Labeler Diagnostics window appears.

Related topics

For information about...	See...
Establishing communication with the device	• "VWorks software—establishing communications with the device" on page 65 • "BenchWorks—establishing communications with the device" on page 70 • "PlateTag software—establishing communications with the device" on page 73
Profiles	"Creating and managing profiles" on page 77
Designing label formats	"Creating label formats" on page 91
Setting up and running a VWorks labeling protocol	*VWorks Automation Control User Guide*
Setting up and running a BenchWorks labeling protocol	*BenchWorks Automation Control User Guide*
Setting up and running a PlateTag print job	"PlateTag—Running a print job" on page 113
ActiveX controls	"Microplate Labeler ActiveX control" on page 205

Creating and managing profiles

About this topic

A profile contains the initialization settings associated with a particular device that are required for communication. Every Microplate Labeler on a given network requires its own profile. You can use the provided Ethernet or serial profile for the first Microplate Labeler. However, for each additional Microplate Labeler you must create an additional profile.

This topic describes the following procedures:

- "Creating a profile" on page 78
- "Initializing a profile" on page 78

Before you begin

CAUTION   Each profile can be used by multiple protocols. Deleting, renaming, or changing the parameters for a profile based on one protocol can invalidate other protocols that use the profile.

CAUTION   The plate stage teachpoints are associated with a specific device profile. If you delete the profile, the teachpoints are also deleted.

Ensure that Microplate Labeler Diagnostics is open. If it is not yet open, see "Opening Microplate Labeler Diagnostics" on page 75.

Figure   Microplate Labeler Diagnostics—Profiles tab
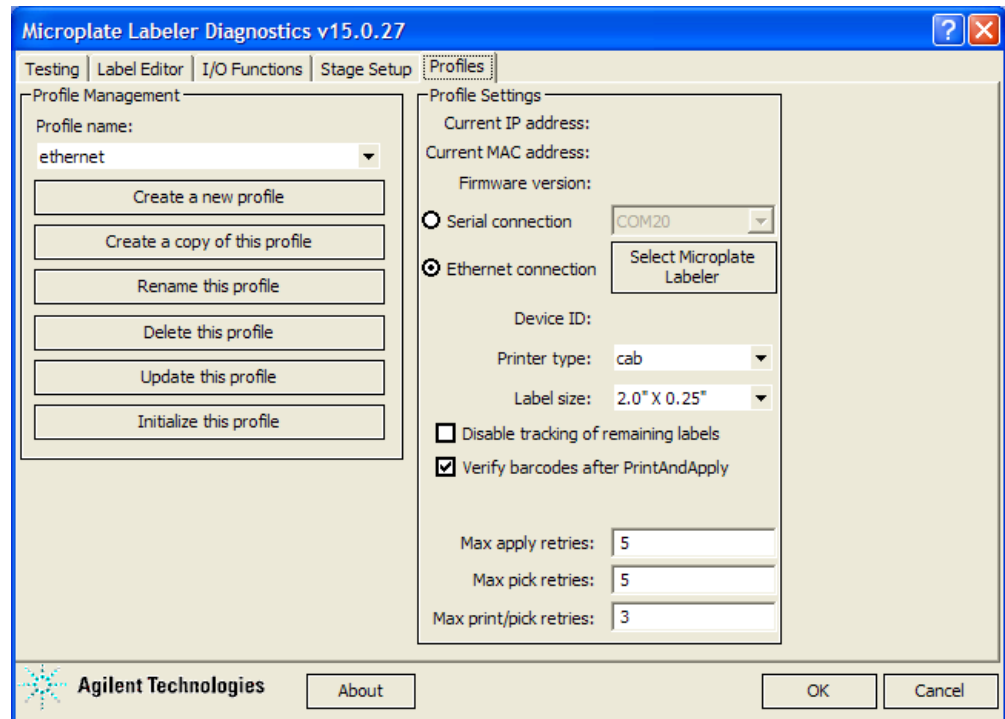
Creating a profile

To create a profile:

1   In the **Profiles** tab, do one of the following:

- Click **Create a new profile**. In the **Create Profile** dialog box, type the name for the new profile, and then click **OK**.

- Select a profile to use as a template, and then click **Create a copy of this profile.** To rename the copy, click **Rename this profile**.

2   Select one of the following communication connections:

a   *Serial*. Select **Serial connection**, and then select which computer COM port to use for the connection. Go to .

b   *Ethernet*. Select **Ethernet connection**, and then click **Select Microplate Labeler.** Proceed to .

3   *Ethernet connection only*. In the **Discovered BioNet Devices** dialog box, do the following:

a   Click the **Select the Ethernet adapter to use from the list below**, and select the correct adapter for the device connection.

b   In the list of devices that appear, select the Microplate Labeler device. If multiple Microplate Labeler devices are on the network, use the **MAC Address** to identify the Microplate Labeler device for this profile.

To successfully communicate with the Microplate Labeler device, the **Status** column must display **New** or **Matched**.

c   Click **OK**.
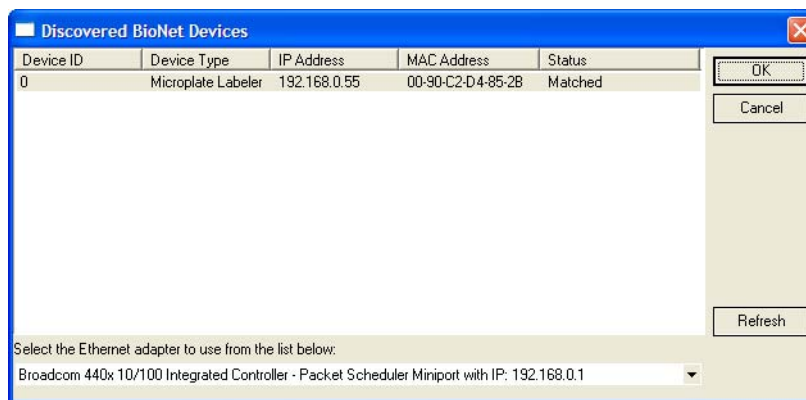
4   In the **Printer type** list, ensure that the **cab** option is selected. The G5404B Microplate Labeler has a cab thermal printer.

5   If the optional barcode reader is installed, select **Verify barcodes after PrintAndApply**.

6   To save the profile, click **Update this profile**.

Note: You can use the default values for the remaining profile settings. For a description of each parameter, see "Profiles tab" on page 201.

Initializing a profile

If you want to control the device using Microplate Labeler Diagnostics, you must initialize the profile.

To initialize a profile in Microplate Labeler Diagnostics:

1 In the **Profiles** tab, select the profile from the **Profile name** list.

2 Click **Initialize this profile**.

Related topics

For information about…	See…
Setup workflow	• "VWorks or BenchWorks—setup workflow for integrated device" on page 63 • "PlateTag—setup workflow for standalone device" on page 72
Microplate Labeler Diagnostics	• "Opening Microplate Labeler Diagnostics" on page 75 • "Quick reference to Diagnostics software" on page 179
Designing label formats	"Creating label formats" on page 91
Setting up and running a VWorks labeling protocol	*VWorks Automation Control User Guide*
Setting up and running a BenchWorks labeling protocol	*BenchWorks Automation Control User Guide*
Setting up and running a PlateTag print job	"PlateTag—Running a print job" on page 113
Troubleshooting problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Placing a microplate on the plate stage

About this topic

This topic explains how to place a microplate on the plate stage manually.

Procedure

To place a microplate on the plate stage:

1 Orient the microplate so that the A1 well is in the far left corner, matching the A1 label on the plate stage.

2 Carefully lower the microplate onto the stage, making sure that the microplate lies flat.
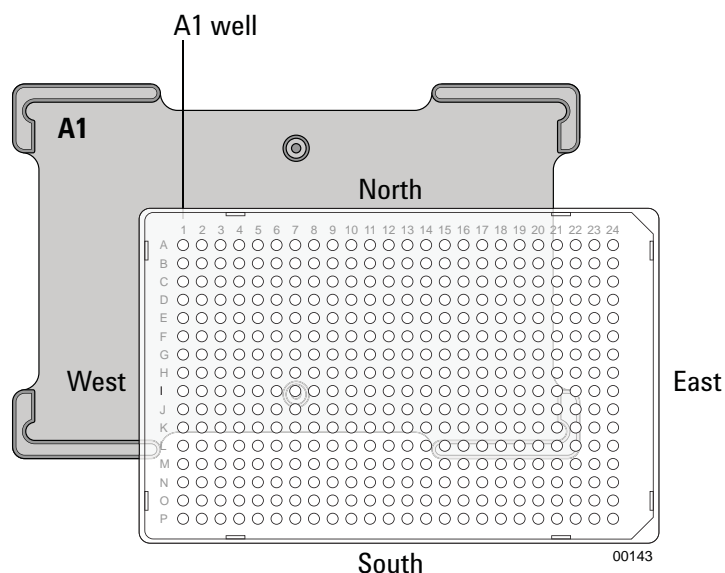
When the microplate is on the plate stage, the sides of the microplate are referred to as north, south, east, and west as the figure shows.

IMPORTANT If you purchased a standalone Microplate Labeler and later decide to integrate the device with a BenchCel Workstation or BioCel System, a different type of plate stage may be required. Contact Automation Solutions Technical Support for more information.

Related topics

For information about…	See…
Next step in the setup workflow	• "VWorks or BenchWorks—setup workflow for integrated device" on page 63 • "PlateTag—setup workflow for standalone device" on page 72

For information about...	See...
Selecting labware	"Labware considerations" on page 23
Plate stage and applicator head positions	"About plate stage and applicator head positions" on page 81

About plate stage and applicator head positions

About this topic

During operation, both the plate stage and applicator head move to various positions. This topic summarizes those positions and gives the background information required for the following procedures:

- "Setting the plate stage vertical positions" on page 84
- "Setting the robot pickup angle teachpoint" on page 88

Plate stage teachpoints

The following plate stage positions are called teachpoints:

- *Robot pickup angle*. Specifies the position that the plate stage returns to when a print-and-apply cycle is completed.
- *Apply angle (east)*. Specifies the teachpoint position to which the plate stage rotates so that the east side faces the applicator head.
- *Read angle (east)*. Specifies the teachpoint position to which the plate stage rotates so that the east side faces the optional barcode reader.
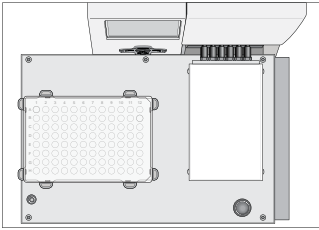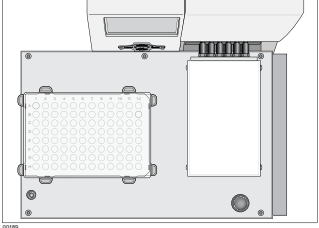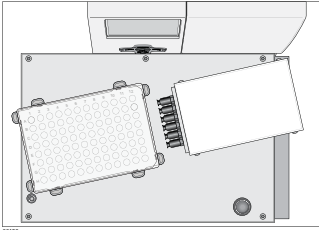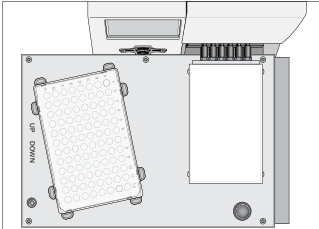
Applicator head positions

The applicator head rotates to the printer to pick up a label, and rotates to the plate stage to apply a label. If the applicator head is out of alignment with either the printer or the plate stage, contact Automation Solutions Technical Support.

Positions summary

The following table summarizes the positions of the plate stage and applicator head at various points in a print-and-apply cycle.

Device Top View	Point in Cycle	Plate Stage Position	Applicator Head Position
	Start	Factory-set home position.	Factory-set position pointing towards the printer
	During microplate placing and pickup	At the robot pickup angle teachpoint. The default robot pickup angle value is 0.	Factory-set position pointing towards the printer
	As a label is applied	At the apply angle teachpoint (with east side of stage towards the applicator head) and at one of two heights defined by the drop stage value. The default angle value is 349, approximately.	Pointing towards the plate
	As a barcode is read	At the barcode angle teachpoint, with the east side oriented towards the optional barcode reader mounted to the side of the printer. The default angle value is 259, approximately.	Pointing towards the printer

Related topics

For information about...	See...
The general steps in the labeling process	"How the Microplate Labeler applies a label" on page 26

For information about...	See...
Setup workflow	• "VWorks or BenchWorks—setup workflow for integrated device" on page 63 • "PlateTag—setup workflow for standalone device" on page 72
Setting the top and bottom positions of the plate stage	"Setting the plate stage vertical positions" on page 84
Adjusting the robot pickup angle	"Setting the robot pickup angle teachpoint" on page 88
Moving the plate stage	"Using plate stage controls in Diagnostics" on page 149
Applicator head and plate stage	"Checking the basic applicator functions" on page 144

Setting the plate stage vertical positions

About this topic

The Microplate Labeler accommodates a wide range of microplates, including deep-well microplates, full-skirt PCR microplates, and tube racks. For details on supported labware, see "Labware considerations" on page 23.

The Microplate Labeler plate stage enables labeling at two vertical positions: top and bottom. You can adjust automatically to the top or bottom position to accommodate labware with special requirements, such as tall microplate skirts. The top and bottom positions are set at the factory for the most commonly used microplate sizes. This topic explains how to change the top and bottom positions if necessary.

When to change the vertical plate stage position

To accommodate different microplates sizes and skirt heights, you can adjust the top and bottom plate stage positions. Different types of microplates can have different skirt heights. A label positioned at the optimal height on one microplate will be either too high or too low on a microplate that has a significantly different skirt height.

Figure   Examples of label positions of different sizes of labware
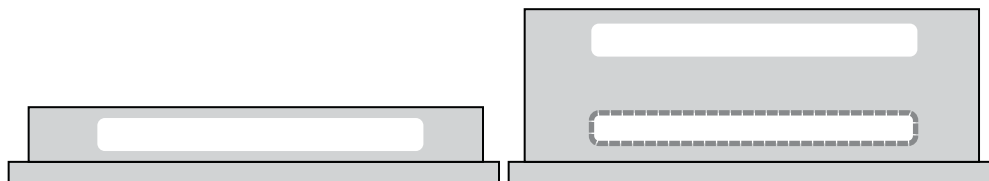
For shallow microplates, you might set the plate stage in the top position. For microplates with tall skirts, you might have to drop the plate stage to the bottom position. If you are using both types of microplates, you can use a different position for each.

You set the plate stage top and bottom positions mechanically. In the software, you specify whether the top or bottom position is used to label a specific microplate. Before labeling a microplate, the plate stage moves to the vertical position specified by the labware definition (VWorks or BenchWorks) or the schema (PlateTag).

Plate spacer

The Microplate Labeler is shipped with a plate spacer installed. If you are using a microplate that cannot be labeled properly through adjustment of the plate stage height, you can remove the plate spacer. When the plate spacer is removed, labels can be placed 0.635-cm (0.25-in) higher on the microplate, but the adjustment also affects how close to the bottom of the microplate a label can be placed. For more information, contact Automation Solutions Technical Support.

Plate stage positions for microplates of the same height

If all of the microplates that use have the same skirt height, you can set the top and bottom positions to the same height. This enables you to determine if one of the stage height positions has drifted. If any vertical movement occurs in the plate stage when you use the drop stage command in Microplate Labeler Diagnostics, drift has occurred.

Before you start

- Open Microplate Labeler Diagnostics. For details, see "Opening Microplate Labeler Diagnostics" on page 75.
- Locate a 2.5-mm hex wrench.

Procedures

The top and bottom heights of the plate stage are determined by mechanical stops that you position by turning the following set screws located near the plate stage:

- UP sets the top position.
- DOWN sets the bottom position.

Figure Plate stage adjustment set screws (UP and DOWN)
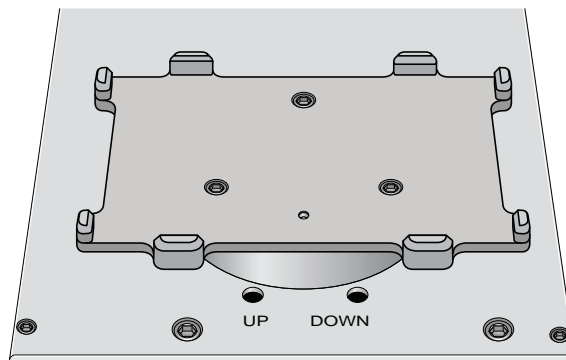
The procedures for setting the top and bottom positions are given separately.

Setting the top position

To set the top position of the plate stage:

1 Place the microplate that you want to use at the top position on the plate stage.

2 In **Microplate Labeler Diagnostics**, click the **Stage Setup** tab.

3 Under **Teachpoints**, locate **Apply angle (east side)**, and click **Move here** to move the plate stage to the apply angle teachpoint.

4 Click the **I/O Functions** tab, and click **Raise stage**, if necessary, to move the plate stage to the top position.

5 To check the top position:

　　a In the **I/O Functions** tab, click **Rotate to stage**, and then click **Extend head** to extend the applicator head.

　　b Examine the alignment between the application head vacuum pads and the side of the microplate.

Your goal is to position the vacuum pads at the desired height of the label on the microplate.

c Click **Retract head,** and then click **Rotate to printer** to move the applicator head out of the path of the plate stage.

If the height appears to be correct, go to step 8 to home the stage and run a print-and-apply test. If the position requires adjustment, go to step 6.

6 Select the **Disable stage auto-repositioning** check box, and then manually rotate the plate stage to gain access to the UP and DOWN set screws.

7 Insert the 2.5-mm hex wrench into the UP set screw. Turn counterclockwise to raise the plate stage, or turn clockwise to lower the plate stage.

Raise or lower the plate stage based on how much you want the label to move from where it has been placed.
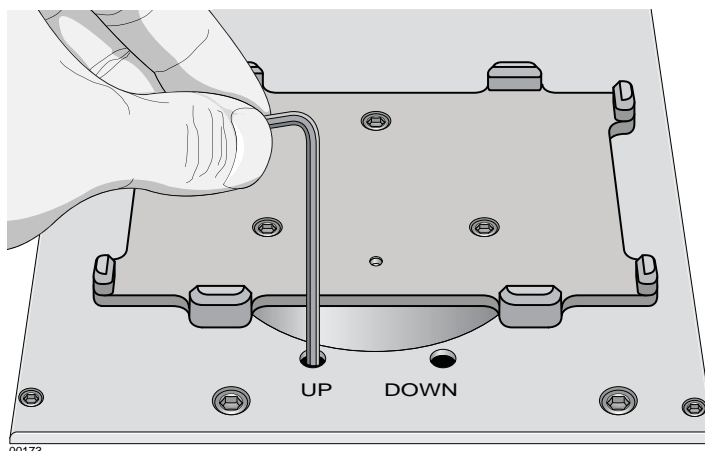
8 In the **Stage Setup** tab, click **Home stage**.

9 To check the position:

a In **Microplate Labeler Diagnostics**, click the **Testing** tab.

b Select **Print and apply**, and then click **Run test**.

10 Examine the vertical alignment of the label on the microplate.

If necessary, repeat step 5 to step 8 until the adjustment is correct. After adjusting the top position, use the following procedure to check the bottom position.

Setting the bottom position

To set the bottom position of the plate stage:

1 Place the microplate that you want to use at the lower position on the plate stage.

2 In the **Stage Setup** tab, locate **Apply angle (east side)**, and click **Move here** to move the plate stage to the apply angle teachpoint.

3 Click the **I/O Functions** tab, and click **Drop stage**, if necessary, to move the plate stage to the bottom position.

4 To check the bottom height position:

a Click **Rotate to stage**, and then click **Extend head** to extend the applicator head.

    b Examine the alignment between the application head vacuum pads and the side of the microplate.

   Your goal is to position the vacuum pads at the desired height of the label.

    c Click **Retract head,** and then click **Rotate to printer** to move the applicator head out of the path of the plate stage.

    If the position appears to be correct, go to step 7 to run a print-and-apply test. If the position requires adjustment, proceed to step 5.

5 Ensure the **Disable stage auto-repositioning** check box is selected. Manually rotate the plate stage to gain access to the UP and DOWN set screws.

6 Insert the 2.5-mm hex wrench into the DOWN set screw. Turn clockwise to raise the plate stage, and turn counter-clockwise to lower the plate stage.

7 In the **Stage Setup** tab, click **Home stage**.

8 To check the position:

    a In **Microplate Labeler Diagnostics**, click the **Testing** tab.

    b Select **Print and apply**, and then click **Run test**.

9 Examine the vertical alignment of the label on the microplate.

    If necessary, repeat step 4 to step 8 until the adjustment is correct.

10 Ensure that the **Disable stage auto-repositioning** check box is clear (not selected).

About automatically adjusting the stage height during a run

The procedure for setting the plate stage height parameter varies depending on which software you use to control the Microplate Labeler:

Automation control software	See…
VWorks software. In the labware definition of a microplate that uses the plate stage bottom position, select the option to lower the plate at the Microplate Labeler. This parameter is in the Labware Editor—Plate Properties tab.	*VWorks Automation Control Setup Guide*
BenchWorks software. In the labware definition of a microplate that uses the plate stage bottom position, select the option to lower the plate at the Microplate Labeler (VCode). This parameter is in the Labware Editor—Plate Properties tab.	*BenchWorks Automation Control User Guide*
PlateTag. Specify Stage DOWN (bottom position) or Stage UP (top position) when configuring a print schema.	"PlateTag print jobs and schemas" on page 116
ActiveX. When setting up a print schema, set the dropStage parameter to TRUE (bottom position) or FALSE (top position).	"Microplate Labeler ActiveX control" on page 205

Related topics

For information about...	See...
Starting Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Setup workflow	• "VWorks or BenchWorks—setup workflow for integrated device" on page 63 • "PlateTag—setup workflow for standalone device" on page 72
Moving the plate stage	"Using plate stage controls in Diagnostics" on page 149
How to resolve problems	"Reporting problems" on page 176

Setting the robot pickup angle teachpoint

About this topic

The robot pickup angle is the position that the plate stage returns to after a print-and-apply cycle is completed. The teachpoint for the robot pickup angle is set at the factory.

If your Microplate Labeler is:

• A standalone device, this teachpoint should not require adjustment.

• Integrated in a BioCel System or BenchCel Workstation, this teachpoint is already set for you.

• Integrated in a third-party lab automation system, this teachpoint might require adjustment to accommodate your robot's geometry.

This topic explains how to adjust the robot pickup angle and set the teachpoint so that a robot can deliver or pick up a microplate from the plate stage.

CAUTION   The Apply angle (east) and Read angle (east) teachpoints are set at the factory. Do not attempt to set these teachpoints. If you think either of these two teachpoints require adjustment, contact Automation Solutions Technical Support.

Viewing the robot pickup angle

The Stage Setup tab in Microplate Labeler Diagnostics displays the teachpoint settings.
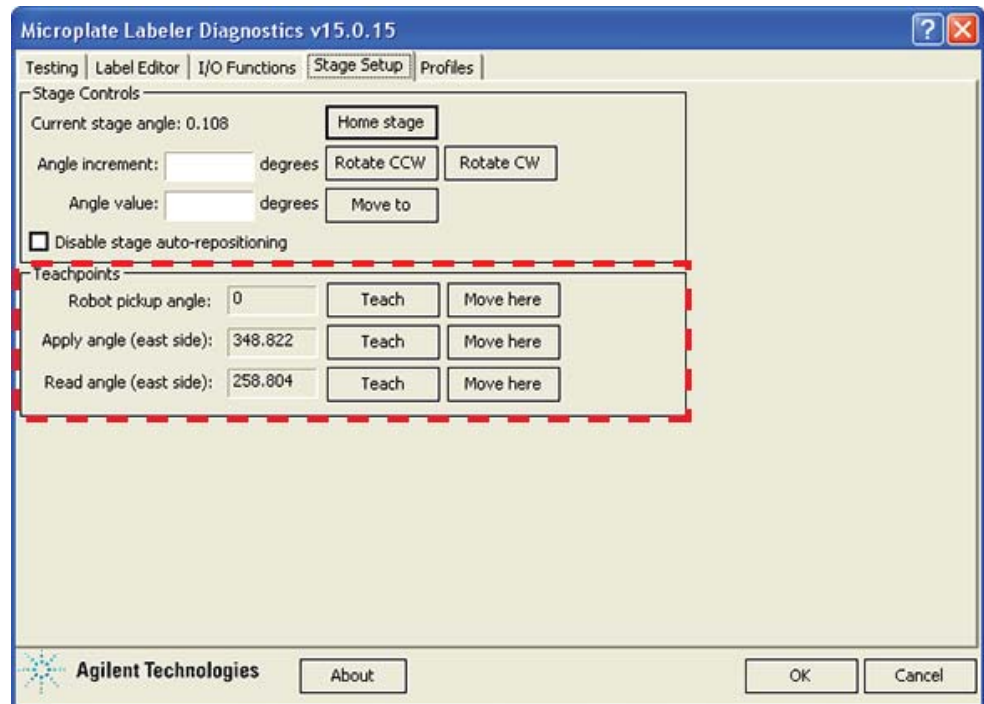
To view the robot pickup angle:

1   Ensure that the Microplate Labeler device is initialized:

- For the VWorks software, see "Initializing the Microplate Labeler in the VWorks software" on page 68.
- For the BenchWorks software, see "Initializing the Microplate Labeler in the BenchWorks software" on page 70.
- For the PlateTag software, see "Connecting to the Microplate Labeler" on page 73.

2   Open **Microplate Labeler Diagnostics**.

3   Click the **Stage Setup** tab.

4   Under **Teachpoints**, check the value for the **Robot pickup angle**.

Two methods for setting the robot pickup angle

You can use either of the following procedures for setting the robot pickup angle:

- Specify an angle in the Angle value box or the Angle increment box.
- Manually move the plate stage to a position and then set its position as the teachpoint.

Specifying a new angle

To set the robot pickup angle by specifying the angle:

1   Ensure the device is initialized, and **Microplate Labeler Diagnostics** is open.

2 Ensure that the applicator head is pointing towards the printer.

If necessary, click the **I/O Functions** tab, and then click **Rotate to printer**. The applicator head rotates towards the printer, moving it out of the plate stage rotation path.

3 Under **Stage Controls**, type a value in the **Angle value** box, and then click **Move to**.

Alternatively, type a value in the **Angle increment** box, and then click **Rotate CCW** or **Rotate CW**.

4 If the position is correct, under **Teachpoints**, locate **Robot pickup angle**, and then click **Teach**.

5 In the **Profiles** tab, click **Update this profile**.

Manually moving the plate stage

To set the robot pickup angle by manually moving the plate stage:

1 Ensure the device is initialized, and **Microplate Labeler Diagnostics** is open.

2 Ensure that the applicator head is pointing towards the printer.

If necessary, click the **I/O Functions** tab, and then click **Rotate to printer**. The applicator head rotates towards the printer, moving it out of the plate stage rotation path.

> **CAUTION**   Before moving the plate stage, make sure that the applicator head is not in the path of the plate stage.

3 Click the **Stage Setup** tab, and select **Disable stage auto-repositioning**.

4 Manually rotate the plate stage to the desired position.

5 Under **Teachpoints**, locate **Robot pickup angle**, and then click **Teach**.

6 Clear the **Disable stage auto-repositioning** check box.

7 In the **Profiles** tab, click **Update this profile**.

Related topics

For information about…	See…
Microplate Labeler Diagnostics	• "Opening Microplate Labeler Diagnostics" on page 75 • "Quick reference to Diagnostics software" on page 179
Plate stage positions	"About plate stage and applicator head positions" on page 81
Designing label formats	"Creating label formats" on page 91
Setting up and running a labeling protocol	• *VWorks Automation Control User Guide* • *BenchWorks Automation Control User Guide*
Setting up and running a PlateTag print job	"PlateTag–Running a print job" on page 113

5
Creating label formats

The G5404B Microplate Labeler includes templates for label formats that are ready to use or that you can customize. For an overview of the templates, see "Label format templates" on page 190. This chapter describes the label formats and how to create them and customize the templates.

The topics are:

Agilent Technologies

About label formats and content

About this topic

This topic provides an overview of the Microplate Labeler label formats and label content.

Introduction to label formats and content

To create a label, the software requires the following:

- *Label format.* The number and arrangement of fields on a label, and the field type, size, and other attributes.

  Each label printed by the Microplate Labeler contains up to six fields of data. Only one field can be a barcode field. The remaining fields can be human-readable text.

- *Label content.* The data that the software substitutes for the text and barcode fields in the label format when the label is printed.

The following figure shows an example of a label with two fields: one barcode field and one human-readable text field.

Figure   Example label with Code 128 barcode field and human-readable text field
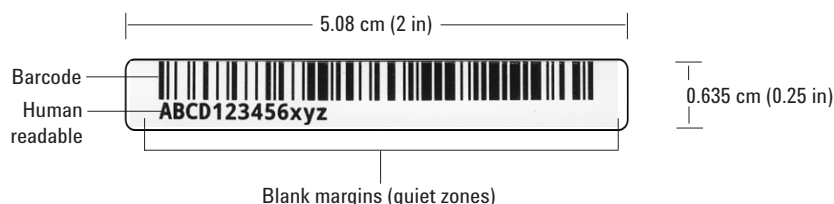
Blank margins (quiet zones)

IMPORTANT   To ensure that the barcode reader can read a barcode, the label should include a blank margin (quiet zone) on each end of the barcode field. In general, the quiet zone should be 10 times the width of the narrowest bar in the barcode or 0.635 cm (0.25 inch), whichever is greater.

When you run a labeling protocol (VWorks or BenchWorks software) or a print job (PlateTag software), the label format loads from the printer's memory. The software substitutes the data (label content) for the text and barcode fields in the label format, and then prints the label.

About label formats

The Microplate Labeler contains a set of template label formats that are ready to use or that you can customize for your lab. For an overview of the templates, see "Label format templates" on page 190. You use the Label Editor tab in Microplate Labeler Diagnostics to create and edit label formats, and to upload the label formats to the printer.

Label format fields and label field data

A label format is the label design definition, which can consist of up to six label fields. Associated with every label field is a set of label field data that defines the following:

- Field type: human-readable text or barcode
- Font family used for printing the human-readable text fields
- Barcode symbology used for text encoding if it is a barcode field
- Position of the field on the label
- Attributes of the field such as field size
- Contents of the field for a test print from the Label Editor tab

Label format storage and uploading

Label formats must be stored in the printer so that they are available for use. The printer can store up to 20 label formats.

Label formats can also be saved in XML files. Before you can use a format that is stored in an XML file, you must first upload the label format to the printer.

To modify a label format, you load the format into the Microplate Labeler Diagnostics—Label Editor tab.

About specifying the label content

When configuring a VWorks or BenchWorks labeling protocol or a PlateTag print job, you select a predefined label format that has been loaded in the printer, and then specify the content for the fields that have been configured in that particular label format. The method for specifying the label content varies depends on which automation control software you use.

Software that controls the device	See…
VWorks software. You create a protocol that contains a Print and Apply task. You select the label format and field content when setting the task parameters. *Note:* You set the plate stage height in the labware definition. You specify which sides of the microplate to label in the plate process parameters.	*VWorks Automation Control User Guide*
BenchWorks software. You create a protocol that contains an Apply Label task. You select the label format and field content when setting the task parameters. *Note:* You set the plate stage height in the labware definition. You specify which sides of the microplate to label in the plate process parameters.	*BenchWorks Automation Control User Guide*
PlateTag software. You configure a PlateTag schema that specifies the label format, the label content, and the plate stage height. You create a print job that specifies which side of the microplate to label and the schema to use for each side. You can use the same schema for multiple sides of a microplate, or designate a different schema for each side.	"PlateTag print jobs and schemas" on page 116

ActiveX control. For a device integrated in a third-party lab automation system, you can use the ActiveX controls to define the label format and content.	"Microplate Labeler ActiveX control" on page 205

Related topics

For information about...	See...
Workflow for running an integrated Microplate Labeler using the VWorks or BenchWorks software	"Integrated Microplate Labeler— operation workflow" on page 27
Workflow for running a standalone Microplate Labeler using PlateTag	"Standalone Microplate Labeler— operation workflow" on page 29
Barcode terminology and symbology	"Barcodes and supported symbologies" on page 109
Customizing a label format template	"Creating and editing label formats" on page 94

Creating and editing label formats

About this topic

The Microplate Labeler contains a set of template label formats that are ready to use or that you can modify. For an overview of the templates, see "Label format templates" on page 190.

This topic describes how to load a label format and then customize it to meet the requirements of your lab.

For a description of label formats and content, see "About label formats and content" on page 92.

Before you start

The following workflow assumes that:

- Microplate Labeler Diagnostics is open. For details, see "Opening Microplate Labeler Diagnostics" on page 75.

- The profile for your device is initialized. For details, see "Initializing a profile" on page 78.

> **CAUTION** Changes that you make to a label format are kept in memory only. To avoid losing changes to a label format, you must upload the revised format to the printer or save the changes to an XML file before selecting a different label format or closing Microplate Labeler Diagnostics.

Workflow for creating or editing a label format

Step	For this task…	See…
1	Load a label format that you want to customize.	"Loading a label format in the Label Editor" on page 95
2	If desired, add additional fields to the label format by right-clicking the Label Editor preview box.	"Adding a field to a label format" on page 97
3	Edit the properties of a field.	• "Editing the field properties" on page 97 • "Changing the field size and other attributes" on page 102
4	Repeat steps 2 and 3 for the other fields in the label.	
5	Upload the edited label format to the printer. Before a label format is available for printing, the format must be uploaded to the printer. Optionally, save a backup copy to an XML file.	"Uploading and saving a format" on page 101.
6	Print a test label to check your changes.	"Printing a test label from the Label Editor tab" on page 102

Loading a label format in the Label Editor

You can load the label format from the printer or from an XML file on the computer.

Note: The G5404B Microplate Labeler supports label formats developed for the cab A2+ printer only.

To load a label format from the printer:

1 In **Microplate Labeler Diagnostics**, click the **Label Editor** tab.

2 In the **Current format** list, select a format, and then click **Load from printer**.
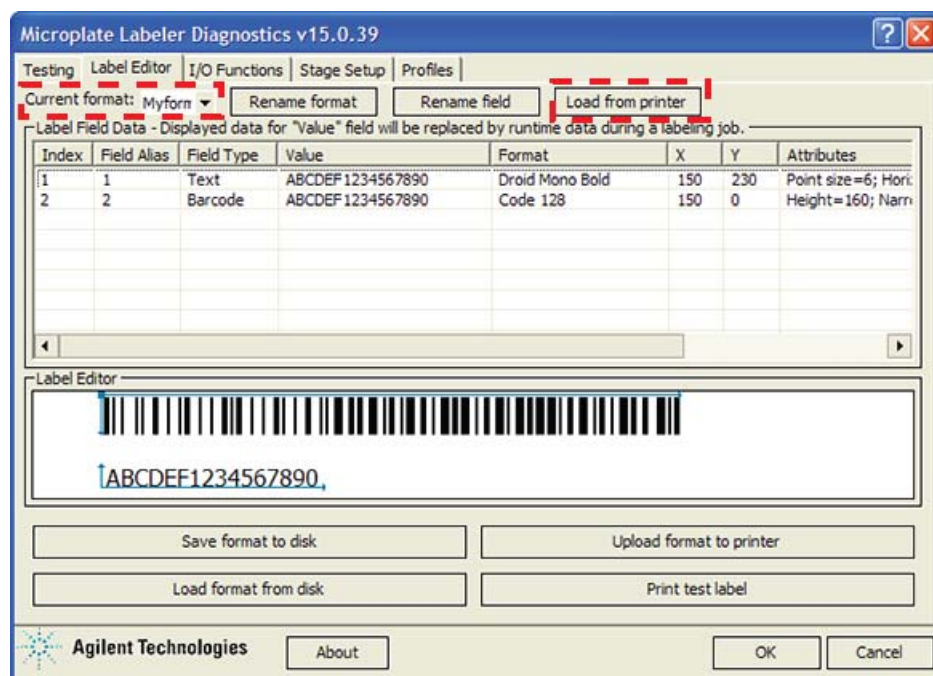
If the selected format has not been defined, the Label Field Data table and the Label Editor preview box are blank. Otherwise, data appear in the table, and a representation of the format appears in the Label Editor preview box.

Alternatively, you can load a label format from an XML file on the computer.

To load a label format from an XML file:

1   In the **Label Editor** tab, click **Load format from disk**.

2   In the **Open** dialog box, navigate to the file storage location, select the XML file, and then click **Open**.

By default, the label format templates are installed in the following folder:

C:\VWorks Workspace\Microplate Labeler Label Formats

Renaming a label format

IMPORTANT   If you are using PlateTag, you must use the format number in the schema for a print job.

To rename a label format:

1   In the **Current format** list, select the desired format and then click **Rename format**.

2   In the dialog box that appears, type the format name, and then click **OK**. The new name appears in the **Current format** list.

Adding a field to a label format

You can add up to six fields in the label. Only one field can be a barcode. The remaining fields can be human-readable text.

To add a field to a label format:

1 Ensure that the format you want to edit is loaded.

2 Right-click in the **Label Editor** preview box, and then choose one of the following from the shortcut menu:

- **Insert text.** Available for any field.

- **Insert barcode.** Available for field 2 only.

  Note: If you want the label to contain a barcode only, you can add a text field, add a barcode field, and then delete the text field.

The default data fills a row in the Label Field Data, and a corresponding field appears in the preview box.
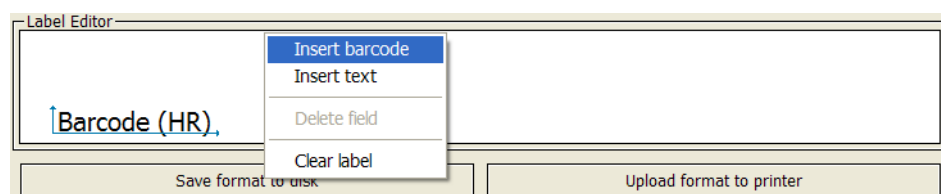
Editing the field properties

This section describes how to change the following field properties:

- Alias
- Value
- Format
- Position (x, y coordinates)

To change the field size and other attributes, see "Changing the field size and other attributes" on page 102.

To clear or remove data from the format, see "Removing unwanted label format data" on page 108.

For a quick reference to each column in the Label Field Data table, see "Label Editor tab" on page 184.

Assigning an alias to a field in the format

To assign an alias to a field in the label:

1 In the **Label Field Data** table, select the desired field (Index 1 to 6), and then click **Rename field**.

2 In the dialog box that appears, type a name, and click **OK**. The name appears in the Field Alias column for the selected field.
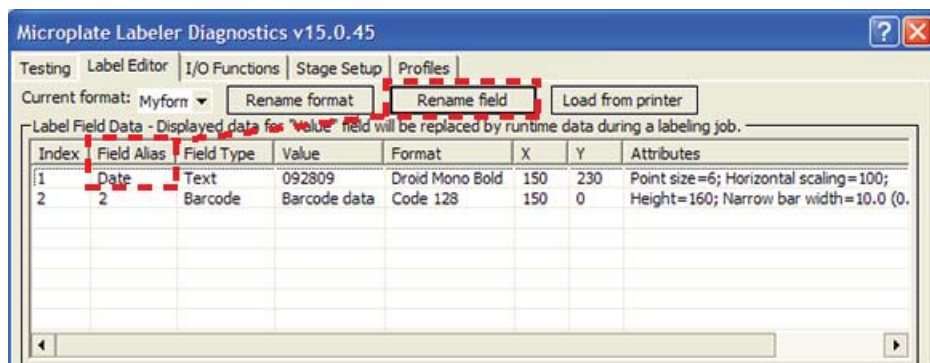
Changing the value

The value property that you specify in the Label Editor tab is used only when performing a test print from the Label Editor tab. When you run a labeling protocol (VWorks or BenchWorks software) or a batch print job (PlateTag software), the value of each field comes from the data source that you select in the VWorks, BenchWorks, or PlateTag software.

A field's value parameter determines:

- *Human-readable field*. The actual text that is printed during a test print.

- *Barcode field*. The actual data that is encoded into the barcode for a test print. The barcode text should follow the rules of the specified symbology, for example, limited to numbers only or uppercase letters and numbers.

To change the value:

1 In the **Field Data Table**, click the entry in the **Value** column for the field that you want to edit. The row is highlighted.

2 Click the value once more to enable editing, and then type a new value that is about the same length as the text for the production labeling.
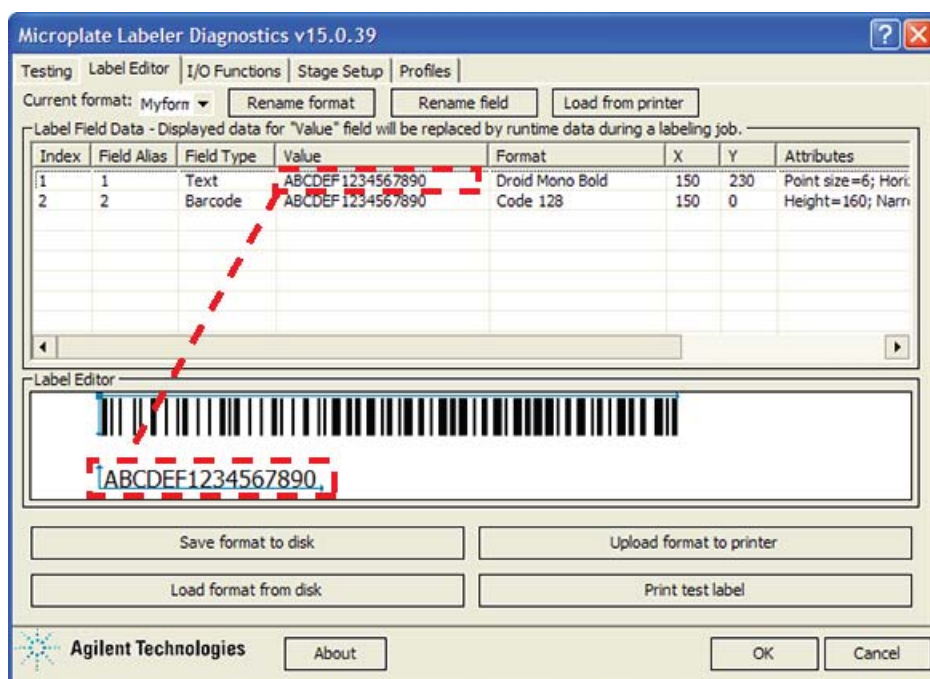
IMPORTANT   Ensure that the characters you enter for a barcode field are supported by the selected format (symbology).

Note: The Label Editor preview provides an approximate representation of the label layout. To view the actual field sizes and positions on the label, print a test label.

Changing the format

A field format determines the printed appearance of a field. For example, the font selection for a text field or the symbology selection for a barcode field.

To change the format of a field:

1   In the **Label Field Data** table, click the name in the **Format** column for the field that you want to edit. The row is highlighted.

2   Click the format name once more to display the list, and then select the desired text font or barcode symbology.

The list changes based on the field type (text or barcode).
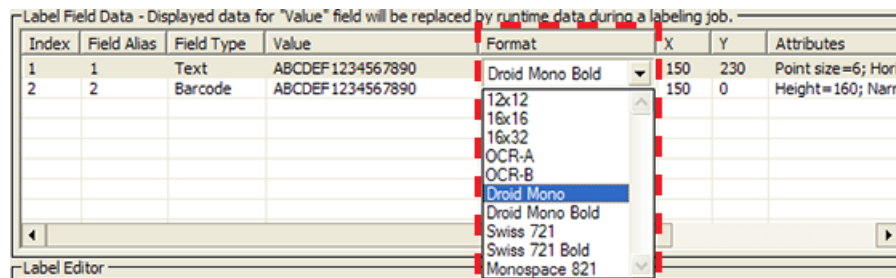
IMPORTANT   For barcode fields, make sure that the symbology you choose supports all of the characters in your field's data. Also, if you are using a barcode reader, make sure that symbology you choose can be read by your barcode readers. For a description of the available symbologies for the Microplate Labeler, see "Barcodes and supported symbologies" on page 109.

Note: The G5404B Microplate Labeler supports label formats developed for the cab A2+ printer only.

Positioning the fields on the label

The Label Editor tab provides two methods for positioning the field on the label:

- *Label Editor preview box*. You can drag each field to an approximate position in the preview box. However, the preview is not precise, and you must test print the label to see the actual field sizes and positions, and then adjust as necessary.

Figure   Example of format in the preview box and actual printed label

Label Editor preview box

Printed label
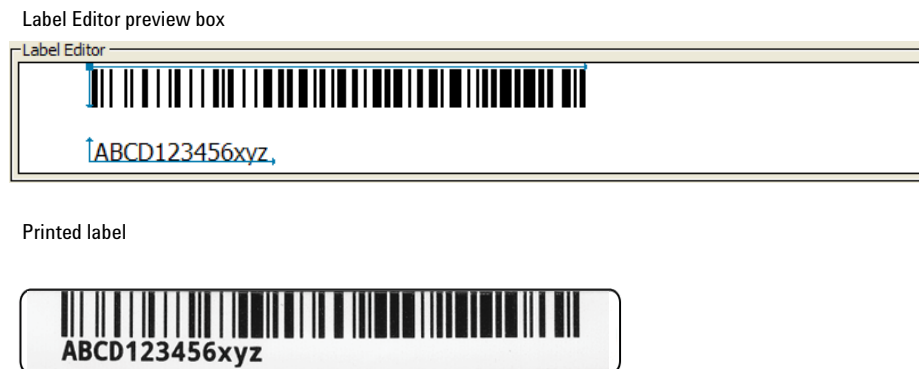
- *X and Y columns.* The X and Y values in the Label Field Data table correspond to the printer's *x-* and *y-*coordinates for the label, where the origin is at the top left corner of the label.
  - *x-coordinate.* The horizontal start position, the distance between the label's left edge and the field's left edge.
  - *y-coordinate.* The vertical start position, the distance between the label's top edge and the text field (bottom left corner) or barcode field (upper left corner).

Index	Field Alias	Field Type	Value	Format	X	Y	Attributes
1	1	Text	ABCDEF 1234567890	Droid Mono Bold	150	230	Point size=6; Hori:
2	2	Barcode	ABCDEF 1234567890	Code 128	150	0	Height=160; Narr:

To position the field's starting point using the X and Y values, you calculate the position based on the following:

- Label size: 0.25 by 2.0 in (0.0635 by 5.08 cm)
- X and Y unit of measure: 0.001 in (0.0254 mm)

  Given the label size, the value ranges are Y: 0 to 250, and X: 0 to 2000.

For example, suppose you want to create a label similar to the one in the following figure. In this example, the upper edge of the barcode field is flush with the label's top edge, the barcode field has a blank margin (quiet zone) on each end to allow readability, and a text field is aligned on the left under the barcode field. The following table provides the X and Y values for the label in the figure.

Figure   Example barcode and text field positions on label

Blank margins (quiet zones)
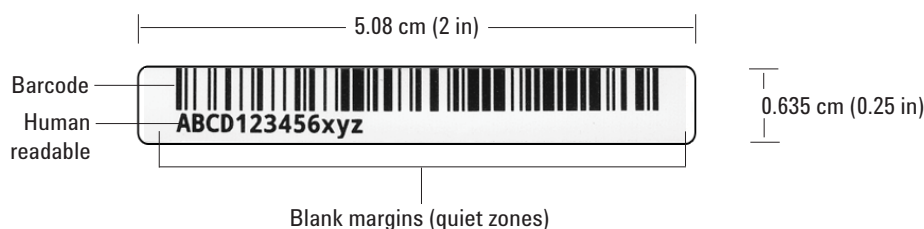
Field type	X, Y values	Position on label
Barcode	X = 150	The field left edge is 0.150 in (0.38 cm) from the label left edge.
	Y = 0	The field top edge is 0.0 in from the label top edge.
Text	X = 150	The field left edge is 0.150 in (0.38 cm) from the label left edge.
	Y = 230	The field bottom edge is 0.230 in (0.58 cm) from the label top edge.

To use the X and Y columns to position a field:

1   In the **Label Field Data** table, click the value in the **X** column for the field that you want to edit. Click the value again to enable editing, and type the new value.

2   Click the value in the **Y** column for the field that you want to edit. Click the value again to enable editing, and type the new value.

In addition to the field's *x, y* coordinates, the field size attributes affect the field's placement on the label. Initially, you can use the default values in the Attributes column. You can upload the label format to the printer, print a test label, and then evaluate whether to adjust the size or placements of the fields.

Uploading and saving a format

After you have created or edited a label format, you must upload it to the printer before it can be used. You might also want to save it in an XML file on the computer, especially as label formats can be accidently overwritten.

To upload a format to the printer:

1   In the **Label Editor** tab, click **Upload format to printer**.

To save a format to an XML file:

1   In the **Label Editor** tab, click **Save format to disk**.

2   In the **Save As** dialog box, specify the XML file name and the file storage location, and click **Save**.

Note: The software saves one label format per XML file.

Printing a test label from the Label Editor tab

After you upload a label format to the printer, you can check your changes by printing a test label.

To print a test label:

1   In the **Label Editor** tab, click **Print test label**, or press the green button on the device.

Alternatively, you can perform test print-and-apply cycles using the Testing tab. See "Performing a print-and-apply test" on page 146.

Related topics

For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Label format and label content	"About label formats and content" on page 92
Performing a print and apply test	"Performing a print-and-apply test" on page 146
Performing a test barcode read	Documentation for your barcode reader
Setting the parameters for the label content	• *VWorks Automation Control User Guide* • *BenchWorks Automation Control User Guide* • "PlateTag print jobs and schemas" on page 116

Changing the field size and other attributes

About this topic

When designing a label format, you can change the size of the fields to make the label more readable or to fit more information on the label. This topic describes how to alter the size of a printed text or barcode field.

Before you start

If you have not already done so, already:

•   Load the label format that you want to modify. See "Loading a label format in the Label Editor" on page 95.

•   Make sure you understand how the fields are positioned on the label. See "Positioning the fields on the label" on page 99.

- Consider the label size when planning the format: 0.0635 by 5.08 cm (0.25 by 2.0 in)

    IMPORTANT   If you increase the field size too much, the printed field may not fit on the label. If you decrease the field size too much, the printed field may not be readable. For example, barcode symbology that is too small may appear as a thin line of dots and dashes.

Changing the size attributes of a text field

To change the size attributes of a text field:

1 In the **Label Field Data** table, click the entry in the **Attributes** column for the field that you want to edit. The row is highlighted.

2 Click the attribute entry once more. The Edit Values dialog box opens.
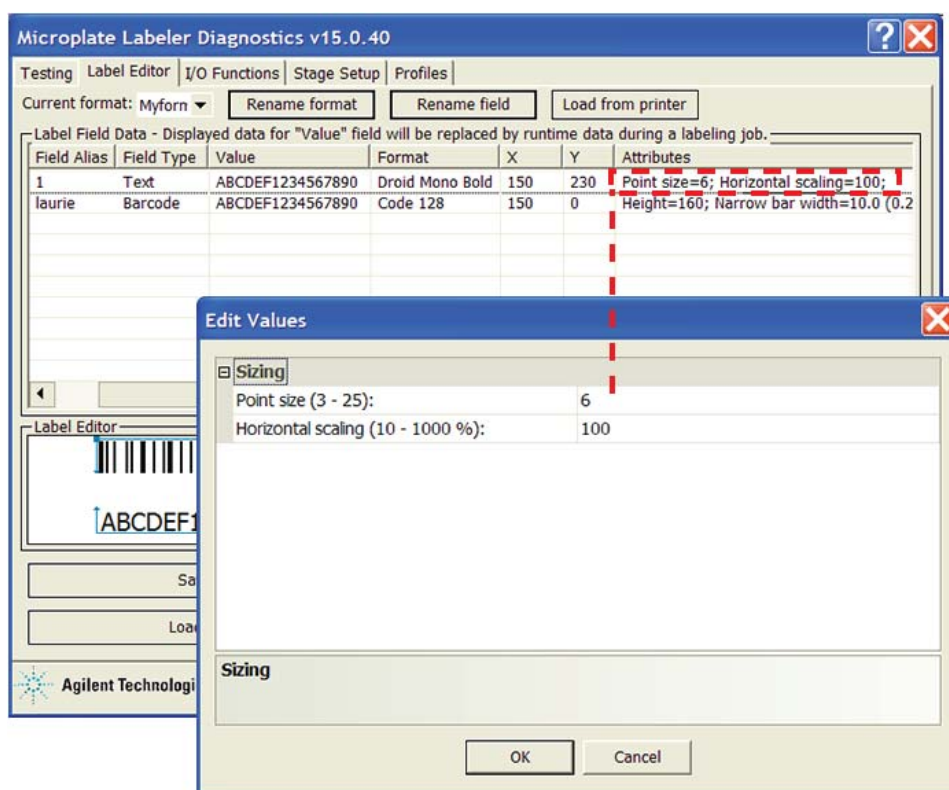
3 In the **Edit Values** dialog box, type the values for the relevant parameters in the **Sizing** area, and then click **OK**.

The available parameters change depending on the format selection.

Font type	Parameter and description
Bitmap fonts: 12x12, 16x16, 16x32, OCR-A, OCR-B	• *Horizontal magnification.* Specifies the x-axis magnification of the text block. • *Vertical magnification.* Specifies the y-axis magnification of the text block. Range: 1–10 The magnification factors are multipliers, for example, a value of 2 is twice as big as 1. The different bitmap fonts are different sizes at a magnification of 1. Therefore, the reasonable range of magnification values varies for each of the bitmap fonts.
Vector fonts: Droid Mono, Droid Mono Bold, Swiss721, Swiss721Bold, Monospaced	• *Point size.* Specifies the height of the font in 0.01 in (0.0254 mm). For example, a 6-point font will be 0.06-in (0.15 cm) tall. The width is scaled to match. • Horizontal scaling (%). Allows you to make the font narrower or wider without changing the font height.

Note: The Label Editor preview box does not reflect the size change. To see the effect, print a test label.

4 To check your changes, see "Checking the attribute changes" on page 106.

Changing the attributes of a barcode field

To change the attributes of a barcode field:

1 In the **Label Field Data** table, click the entry in the **Attributes** column for the field that you want to edit. The row is highlighted.

2 Click the attribute entry once more. The Edit Values dialog box opens.
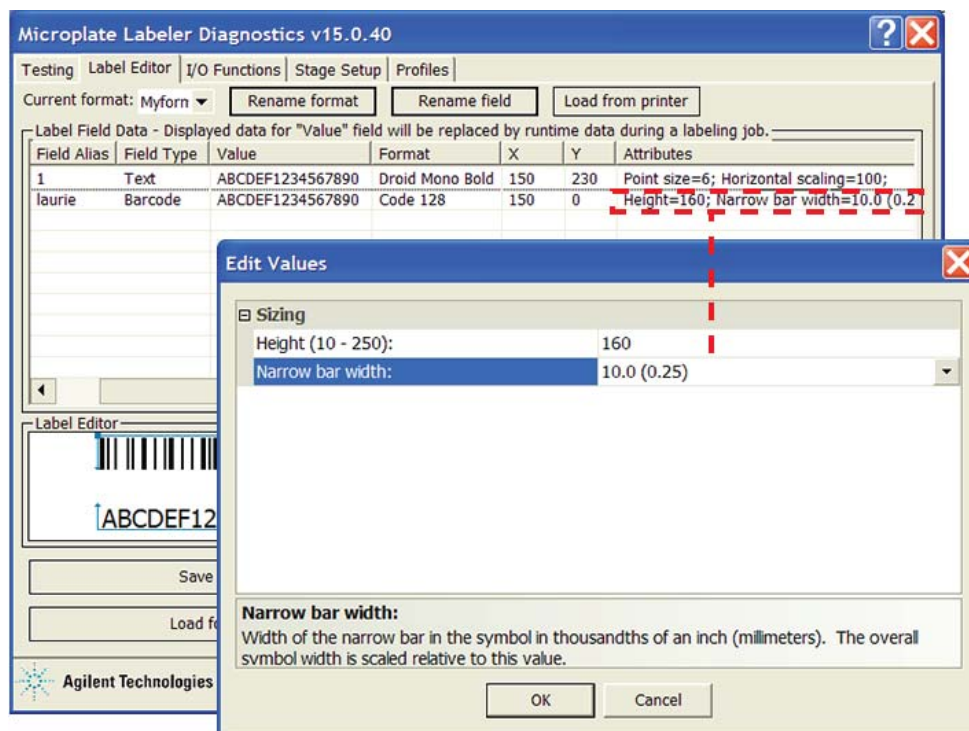
3   In the **Edit Values** dialog box, type or select the values for the relevant parameters, and then click **OK**.

IMPORTANT   Make sure the barcode size allows for sufficient blank margins (quiet zones) on each end of the barcode to ensure readability by a barcode reader.

Parameter	Description
Sizing	Use the sizing parameters to change the barcode size.
• Height	Specifies the height of each bar in 0.001 in (0.0254 mm). The overall barcode width is scaled relative to this value.
	For example, if Height = 150, the barcode is 0.150-in (0.38-cm) tall.
• Narrow bar width	Defines the width of the narrowest bar in the barcode in 0.001 in (0.0254 mm). The overall barcode width is scaled relative to this value.
• Bar width ratio	Defines the ratio between the narrow and wide bars in the barcode. For example, a ratio of 3 means that the wide bar is three times the width of the narrow bar.
• Row height	Defines the height of a single row in a 2D symbology.
• Symbol aspect ratio	Defines the ratio between the height and width of the barcode.
• Dot size	*Data Matrix only*. Defines the size of the dot in the 2D code. The overall height and width of the barcode are scaled to this value.

Parameter	Description
• Columns	*Micro PDF417 only.* Defines how many columns are used (1-4) to display the data.
	The column number combined with the narrow bar width sets the width of the symbol. The printer adds more rows of data (height to the symbol) as more characters are added.
Error level	*PDF417 only.* Defines an error level.

4 Click **Upload format to printer**, and then check your changes using the following procedure.

IMPORTANT Verify that your barcode reader can read the barcode in the label format before doing a production run.

Checking the attribute changes

To check the attribute changes:

1 In the **Label Editor** tab, click **Print test label**, or press the green button on the device.

If after increasing the size of the field, the field does not print, check where the field is positioned on the label. The field may now be positioned off the edge of the label.

IMPORTANT The printer does not always scale barcodes and fonts consistently. If you change a text field's magnification, always perform a test print to make sure that you can still read the text. If you change a barcode field's magnification, perform a test read of the barcode using a barcode reader.

Saving the changes

You must upload the changed format to the printer before the revised or new label format is available for printing.

To upload the format changes to the printer:

1 In the **Label Editor** tab, click **Upload format to printer**.

To save the format changes to an XML file:

1 In the **Label Editor** tab, click **Save format to disk**.

2 In the **Save As** dialog box, specify the file name and the file storage location, and click **Save**.

Related topics

For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Label format vs. content	"About label formats and content" on page 92
Designing label formats	"Creating and editing label formats" on page 94
Performing a test print and apply operation	"Performing a print-and-apply test" on page 146
Performing a test barcode read	Documentation for your barcode reader
Setting the parameters for the label content	• *VWorks Automation Control User Guide* • *BenchWorks Automation Control User Guide* • "PlateTag print jobs and schemas" on page 116

Removing unwanted label format data

About this topic

This topic describes how to delete one or more fields from a label format or clear the label format entirely.

Before you start

If you have not already done so, complete the following steps:

Step	Task	See...
1	Open Microplate Labeler Diagnostics.	"Opening Microplate Labeler Diagnostics" on page 75
2	Ensure the profile for your device is initialized.	"Initializing a profile" on page 78
3	In the Label Editor tab, load the label format that you want to modify.	"Loading a label format in the Label Editor" on page 95

Deleting a field

To delete a field:

1 In the **Label Editor** tab, right-click the field in the **Label Editor** preview box.

2 In the shortcut menu that appears, choose **Delete field**.

Clearing a label

To clear a label of its contents:

1 In the **Label Editor** tab, right-click in the **Label Editor** preview box.

2 In the shortcut menu that appears, choose **Clear label**.

All of the data in the Label Editor tab disappears.

Related topics

| For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Designing label formats	"Creating and editing label formats" on page 94

Barcodes and supported symbologies

About this topic

This topic presents basic barcode concepts and provides examples of the supported symbologies.

Symbologies

Barcode *symbologies* define the mapping between a barcode and the text that it represents. There are more than 50 barcode symbologies. Barcode symbologies that are typically used in labs are those that create compact barcodes, such as Code 128, Code 39, and Interleaved 2 of 5. The Microplate Labeler also supports printing of 2D barcode symbologies. For examples of the symbologies that are supported by the Microplate Labeler printer, see "Supported barcode symbologies" on page 110.
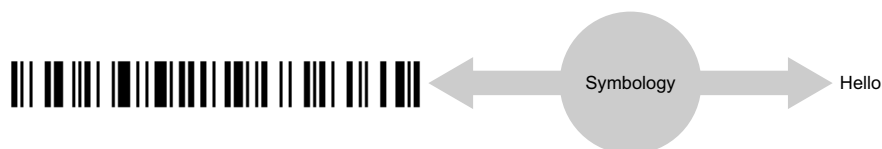
Encoding and decoding

The printer includes encoding software that converts the text that you provide in a field into a barcode pattern.

If your Microplate Labeler has a barcode reader, the decoder software in the reader converts the pattern of a barcode back into text.
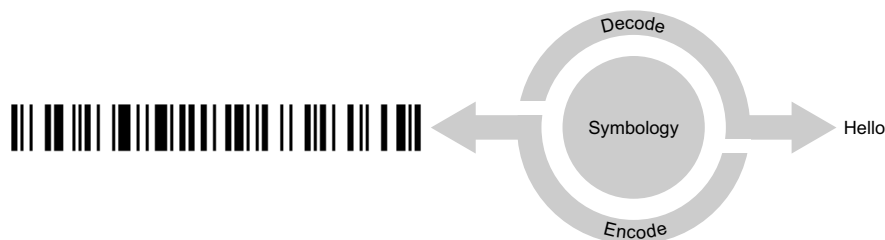
Encoding examples

The following example shows how a label will print when the word *Test* is represented in two types of fields:

- Field 1 as human-readable text
- Field 2 as a barcode that uses the Code 128 symbology

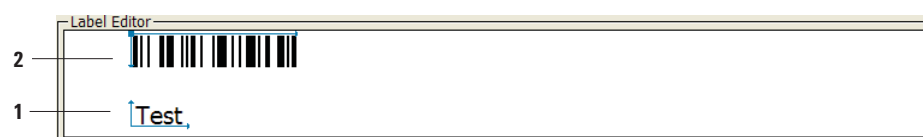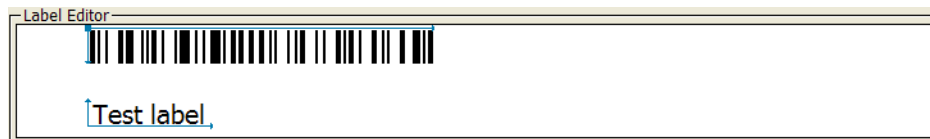The next example uses the same symbology, but the words *Test label* are used for both fields. Notice that the barcode is longer because the amount of text encoded is greater.

Label Editor

Test label,

In the following example, the words *Test label* are printed as a text field and as a barcode field using the Code 39 symbology. If you compare this with the previous example, you can see that the different symbology makes a different barcode pattern.

Label Editor

Test label,

The two-dimensional (2D) barcodes can contain more information than conventional linear barcodes because they encode data in both horizontal and vertical directions.

Supported barcode symbologies

The following table provides a summary of the symbologies supported on the Microplate Labeler. You can find complete descriptions of the symbologies on the web at various sites, for example, www.wikipedia.org.

Symbology name	Summary description
Code 128 f h 4 5 3 4 f	Variable-length, high-density, symbology that can encode all 128 ASCII characters. Has 106 different bar and space patterns and each pattern can have one of three different meanings, depending on which of three different character sets is employed.
Codabar A 2 3 3 4 2 4 5 3 D	Variable-length, can encode the characters: 0123456789-$:/.+ABCD
Code 39 Full ASCII C O D E 3 9	Variable-length symbology that can encode the complete 128 ASCII character set.
Code 93 f h 4 5 3 4 f	Variable-length symbology that can encode the complete 128 ASCII character set.
HIBC	Variable-length, modified version of Code 39. Health industry barcode (HIBC)
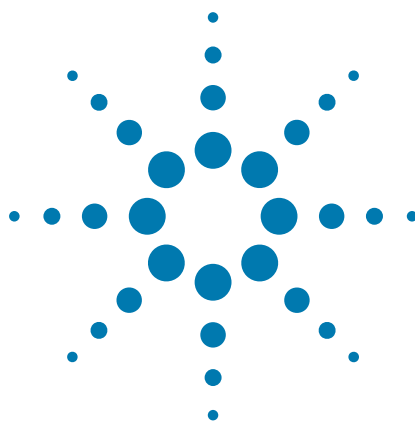
Symbology name	Summary description
Interleaved 2 of 5 (barcode image) 34565678	High-density variable-length, numeric-only (0–9) symbology that encodes numbers in pairs in an interleaved manner.
PDF417 (barcode image)	High-density 2D symbology that essentially consists of a stacked set of smaller barcodes.
MicroPDF417 (barcode image)	A 2D multi-row symbology based on PDF417, designed for applications requiring a greater area efficiency but lower data capacity than PDF417.
Data Matrix (barcode image)	High-density 2D matrix-style symbology that can encode up to 3116 characters from the entire 256-byte ASCII character set.

Related topics

For information about...	See...
Customizing a label format template	"Creating and editing label formats" on page 94
Label format and content	"About label formats and content" on page 92
Setting up a VWorks labeling protocol	*VWorks Automation Control User Guide*, Print and Apply Task topic
Setting up a BenchWorks labeling protocol	*BenchWorks Automation Control User Guide*, Apply Label task topics
Setting up a PlateTag print job	"PlateTag–Running a print job" on page 113

6
PlateTag—Running a print job

This chapter explains how to use the PlateTag software to set up a print job and label a batch of microplates. If you have a standalone Microplate Labeler, you use the PlateTag software to run a print job.

When running a PlateTag batch print job you manually place each microplate on the plate stage for labeling.

This chapter contains the following topics:

If you are preparing to run a labeling protocol using the VWorks software or BenchWorks software, refer to the *VWorks Automation Control User Guide* or the *BenchWorks Automation Control User Guide*.

If you are preparing to run a labeling protocol using a third-party system, see "Microplate Labeler ActiveX control" on page 205.

Agilent Technologies

PlateTag print job workflow

About this topic

This topic describes the steps to follow when performing a batch print-and-apply job using the PlateTag software.

If you are using VWorks software or BenchWorks software to run the Microplate Labeler, see the *VWorks Automation Control User Guide* or the *BenchWorks Automation Control User Guide* for details on how to run a labeling protocol.

Workflow

Step	For this task...	See...
1	Set the parameters for the label content.	• "PlateTag–using data sources" on page 119 • "PlateTag–setting parameters for the label content" on page 122
2	Create and configure a schema.	• "PlateTag–creating a schema" on page 126 • "PlateTag–configuring a schema" on page 128
3	Define and save a print job.	"PlateTag–creating a print job" on page 134
4	*Optional.* Test print the schema using "sticky mode".	"PlateTag–test printing in sticky mode" on page 136
5	Start the print job.	"PlateTag–starting a print job" on page 137

Related topics

For information about...	See...
Installing the Microplate Labeler	"Installation workflow" on page 32
Installing PlateTag software	"Installing the automation control software" on page 48
Labels and formats	"About label formats and content" on page 92
Print jobs and schemas	"PlateTag print jobs and schemas" on page 116
Creating a print job	"PlateTag–creating a print job" on page 134

PlateTag—setting file locations

About this topic

PlateTag saves print job information such as schemas, constants, and counters in XML and text files. The default storage location for these files is in the Microplate Labeler installation folder. If you want to store the information on a networked file server or other storage disk, you can change the location. This topic describes how to change the location of stored files in PlateTag.

Note: Automation Solutions Technical Support may ask you to send one or more of these files when helping you to troubleshoot a problem.

Procedure

For each information type (schemas, constants, counters, barcode clones, and barcode log), PlateTag creates one XML or text file. Even if you define three schemas, all the information will be saved in one schema XML file.

To set the location of a stored file:

1 In the **PlateTag** window, choose **Edit** > **Preferences**.

The PlateTag Preferences dialog box opens.
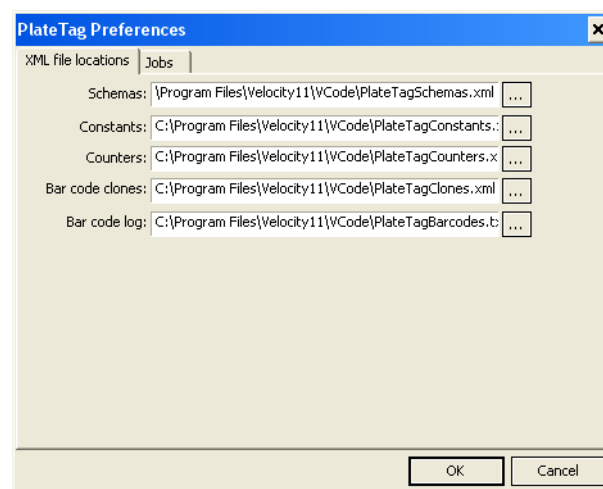
2 Next to the box of the desired file type, click ⋯ .

3 In the **Open** dialog box, select destination folder, and click **Open**.

4 Click **OK**.

Related topics

For information about...	See...
Schemas	"PlateTag print jobs and schemas" on page 116
PlateTag batch labeling workflow	"PlateTag print job workflow" on page 114
Constants, counters, and barcode clones	"PlateTag—setting parameters for the label content" on page 122
Data sources	"PlateTag—using data sources" on page 119
How to report problems	"Reporting problems" on page 176

PlateTag print jobs and schemas

About this topic

This topic describes the print jobs and schemas used in the PlateTag software.

For details on performing labeling protocols using the VWorks software or BenchWorks software, see the *VWorks Automation Control User Guide* or the *BenchWorks Automation Control User Guide*.

Schemas

When you use PlateTag to print and apply labels, you can define a different label for each side of a microplate.

In PlateTag, a schema is used to define how one side of a microplate is labeled. You can use the same schema for all sides of a microplate, or designate a different schema for each side.

A schema includes the following:

• The label format to use

• A definition of the data to be printed for each field in the label

• The plate stage height during the labeling operation (drop stage attribute)

Each schema is given its own name. You use the Schemas tab in PlateTag to create and update schemas.

Print jobs

Setting up a PlateTag print job allows you to apply labels that are:

• Different from microplate to microplate

• Different from one side of a microplate to another

A print job uses one schema for each side of the microplate that you want to label. You use the Print Job tab in PlateTag to set up and start print jobs.

Field definitions

In a schema, the general definition of each label field includes:

- The data type for the field
- The name of a variable that holds the actual data that goes into the field

Data type

A field's data type is one of the following:

Data type	Description
Data Source	An external file from which PlateTag can import field data
Constants	A constant, the value of which remains the same for each label
Counters	A counter, the value of which changes in a regular way with each label
Clones	A barcode copied from another side of the microplate *Note:* An installed barcode reader is required in order to clone a barcode. Text fields cannot be cloned.

Variable names

A schema does not contain the actual data that is printed on a label. A schema contains the name of a variable that holds the actual data.

For example, to use a data type of Counters, the counter first has to be created and given a name. The counter's name (variable name) is then referenced by the schema.

Summary diagram and description

Information flow

The following figure summarizes these concepts and shows the flow of information from variables to schemas, to a print job and finally to barcode labels.

Schema one

Attribute	Data type	Variable name
field 1	Data source	Column1
field 2	Data source	Column1
field 3	Data source	- blank -
field 4	Data source	- blank -
field 5	Data source	- blank -
field 6	Data source	- blank -
Label format	Data source	Column2
Drop stage	Data source	Column3

Print Job

N ← Schema one
E ← Schema one
S ← Schema two
W

Print job defines:
• Compiles schemas
• Initiates print job

Schema two

Attribute	Data type	Variable name
field 1	Counters	My counter
field 2	Counters	Another counter
field 3	Constants	Date
field 4	Constants	
field 5	Constants	
field 6	Constants	
Label format	Constants	Label format 4
Drop stage	Constants	Stage UP

MyCounter

Initial counter value	Base	Prefix	Increment	Interval
0001	36	test	1	1

Date

Constant value
Sept.09

Schema defines:
• Barcode field contents
• Label format
• Vertical stage position

Description

The figure shows how you can use a different schema for different sides of the plate. The Print Job box shows that labels printed on the north and east sides of the microplate are determined by Schema one, and that labels printed on the south side of the microplate are determined by Schema two.

For Schema two, the figure shows how the content is determined for fields 1 and 3 on the south side of the microplate. In the Schema two box:

- Field 1 has the variable name *My Counter*. The variable My Counter is defined as:

  – Starting at 0001 (Initial counter value)

  – Incremented by one each time it is incremented (Increment)

  – Prefixed by the word *test* (Prefix)

  – Incremented each microplate (Interval)

  – Incremented with the alphanumeric series 1–Z (Base)

  The resulting barcode labels will read test0001, test0002, test0003, and so on.

- Field 3 is a constant that has the variable name *Date*. The value of the constant is Sept.09.

- The label format attribute is specified by a constant as label format 4. You can examine the label format in the Label Editor tab of Microplate Labeler Diagnostics to see which fields are text fields and which field is a barcode field.

- The Drop stage attribute is specified by a constant as Stage UP. The plate stage will be at the top position when these labels are applied.

Note: The plate stage position should be the same for all schemas in a print job because the position is dependent on the height of the microplate, which is the same for all sides.

Label format and schema fields

It is important to understand the relationship between label format fields and schema fields. For a field to be printed on a label, it must be defined in both the schema *and* the label format.

Suppose, for example, that in a schema you have specified label format 4 and defined fields 1, 2, 3 and 4. If label format 4 has fields 1, 2, 3 and 4 defined in it, all four fields will print on the label. However, if label format 4 only defines fields 1, 2 and 3, only these first three fields will be printed.

IMPORTANT PlateTag does not issue an error message if a discrepancy occurs between the number of fields in your label format and the number of fields in your schema.

Related topics

For information about...	See...
Label formats	"About label formats and content" on page 92
Schemas	"PlateTag–creating a schema" on page 126
Constants, counters, and barcode clones	"PlateTag–setting parameters for the label content" on page 122
Data sources	"PlateTag–using data sources" on page 119
PlateTag print job workflow	"PlateTag print job workflow" on page 114
How to report problems	"Reporting problems" on page 176

PlateTag—using data sources

About this topic

This topic defines a PlateTag data source, describes the advantages of using a data source, and lists the available types.

Data source defined

A data source is an external file that can be used in a PlateTag schema to define what is printed on each label. A data source can include data for text and barcode fields only. You can use constants for the label format and drop stage settings when creating the schema.

Data source use

The use of a data source is optional. Instead, you can use counters, constants, and clones to define the data to print on a barcode. Either way, you set the source of the label data when creating a schema.

Some advantages of using a data source are that they:

- Can be stored permanently in a format that is easily edited.
- Can use values that have no sequence pattern.
- Are easily re-used or modified.
- Can be automatically generated by a LIMS (lab information management system).

Before creating a data source

You reference a data source in PlateTag at the time you create a schema. You must create the data source before creating the schema, but it will help you to understand data source creation if you understand schemas. See "PlateTag print jobs and schemas" on page 116 to review the information about schemas before you create a data source.

Types of data sources

PlateTag can read data from:

- Comma-separated value (CSV) or tab-delimited text files
- Online databases using Open Database Connectivity (ODBC)

    Note: Setting up an online database is not covered in this guide. For information about using PlateTag with an online database, contact Automation Solutions Technical Support.

Data source structure

A data source is a matrix of rows and columns. Each row contains data for one label to be printed. Each column holds the data for one field in the barcode label.

The top row of the matrix is reserved for the variable names.

Creating a data-source file

Creating a CSV or tab-delimited source file

To create a CSV or tab-delimited source file:

1 Open a text editor, for example, Windows Notepad.

2 In the first row of the file, type the names of the header fields as you want them defined in the schema, a name for the label format, and a name for the drop stage value, separated by commas (CSV).

    This row creates columns to hold the data. The name of each column is the name of the variable for that field.
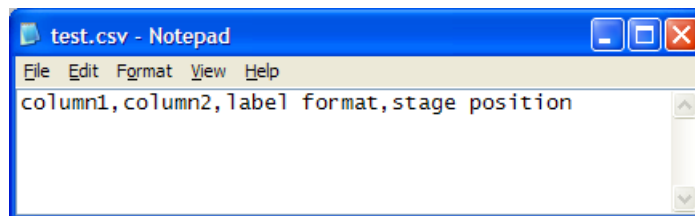
3 In the second and subsequent rows, type the data under the columns.

Make sure that you separate the data with commas but no spaces.
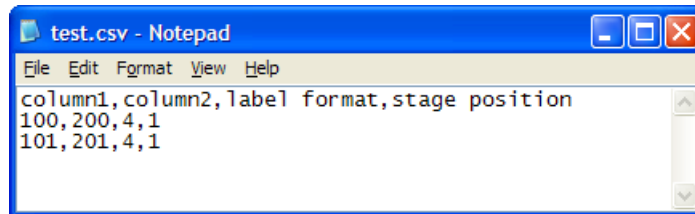
Using Excel to create a data source file

You can also save the data from Microsoft Excel as a comma-separated text or tab-delimited text file. Because the procedure for doing this varies depending on the version of Excel you are using, refer to the documentation provided with your copy of Excel for details.

Note: Although PlateTag only supports Excel 2002 .xls files, you can save a comma-separated file from any version of Excel.

Related topics

For information about...	See...
Label formats	"About label formats and content" on page 92
Schemas	• "PlateTag print jobs and schemas" on page 116 • "PlateTag—creating a schema" on page 126
Selecting a data source file	"Configuring a data source in a schema" on page 130
Constants, counters, and barcode clones	"PlateTag—setting parameters for the label content" on page 122
PlateTag batch labeling workflow	"PlateTag print job workflow" on page 114
How to report problems	"Reporting problems" on page 176

PlateTag—setting parameters for the label content

About this topic

You can set the following parameters, which can be used in a PlateTag schema to define what is printed on each label:

- *Constants*. Optional data type that is used for a field when creating a PlateTag schema. The value of the constant is text or numbers (an alphanumeric text string) that is the same for each label that is printed. See "Creating a constant" on page 122.

- *Counters*. Optional data type that is used for a field when creating a PlateTag schema. The value of a counter changes in a regular way for the specified interval (microplates). See "Creating a counter" on page 123.

- *Clones*. See "Cloning a barcode" on page 125.

If you are using PlateTag and want to import the label content from a data source, see "PlateTag–using data sources" on page 119.

If you are using the VWorks software or BenchWorks software, see the *VWorks Automation Control User Guide* or *BenchWorks Automation Control User Guide* for details on how to set the parameters for the label content.

Creating a constant

About constants

You can use a constant to record information such as:

- Laboratory name
- Assay name
- Reaction name
- Label format number
- Drop stage attribute
- Date

After creating a constant, you add it to a schema by selecting the variable name that you gave to the constant.

Procedure

To create a constant:

1 In the **PlateTag** window, click the **Schemas** tab at the bottom of the page.

2 Click the **Constants** tab. The following default definitions for constants appear in the tab:

Variable name	Constant value
Stage UP	0
Stage DOWN	1
Label format 1	1
Label format 2	2
Label format 3	3
Label format 4	4

By default, the software provides four label format constants. If you plan to use more than four label formats, make sure you add a new constant for each additional label format.

3 To add a constant to the list of defaults, click **Add new constant**. A row for the new constant appears.

Data source	Constants	Counters	Clones	
Variable name		Constant value		
Stage UP		0		
Stage DOWN		1		
Label format 1		1		
Label format 2		2		
Label format 3		3		
Label format 4		4		
New Constant #7				

Add new constant   Delete selected constant

4 To edit the parameter values, click twice in the appropriate column, and then type the value:

Parameter	Description
Variable name	A name for the constant that is easy to remember, for example, *date*. This name becomes the variable name in the schema. It does not appear on the barcode label.
Constant value	The information that controls the appearance of the label or appears on the label, either as text or encoded as a barcode. For example, the variable name *label format 1* has a constant value of 1, which specifies the format of the label. The variable name *date* could have a constant value of a specific date, *090930*, that appears on the label as text. **IMPORTANT** The constant value for a label format must be the format number not a format name.

5 Click in the white space outside the columns to apply the changes and create the constant.

Creating a counter

Counters defined

A counter is an optional data type that is used for a field when creating a schema. For the specified interval (microplates), the counter increases in value by the same amount.

Example:

0001, 0002, 0003, 0004...

You can also add constant text before or after the counter.

Example:

Jan6- 0001, Jan6- 0002, Jan6- 0003, Jan6- 0004...

Creating counters

IMPORTANT Use 10 or fewer digits for the Initial counter value. If more than 10 digits are entered, the number is returned as all zeroes.

To create a counter:

1 In the **PlateTag** window, click the **Schemas** tab at the bottom of the page.

2 Click the **Counters** tab. A default sample counter row appears.

Data source	Constants	Counters	Clones

Variable name	Prefix	Suffix	Base	Initial counter value	Increment	Interval (plates)
Sample counter	PREFIX	SUFFIX	10 [0-9]	0001	1	1

Add new counter   Delete selected counter

3 To add another counter, click **Add new counter**. A row for a new counter appears.

4 Click twice in the column for the counter that you are defining, and then enter a value for the parameter. The counter parameters are:

Parameter	Description
Variable name	A name for the counter that is easy to remember.
Prefix	Text preceding the number.
Suffix	Text following the number.
Base	The number base of the counting system.
	The options are base 10 and base 36, which counts from 0–9 and then A–Z.
Initial counter value	The number from which to start counting.
	For example, if there is a constant with the value ABC followed by an initial counter value of 0001, the output is ABC0001, ABC0002...ABC0010.
	If you enter 000001 for the initial counter value, the output is ABC000001, ABC000002...ABC000010.
Increment	The amount by which the initial value increases according to the interval.
Interval (plates)	The number of microplates that are processed before the *initial counter value* is increased.

For example, to generate the following sequence, use a combination of Prefix (DDR-), Initial counter value (0000151), and Suffix (-01), Increment (1), and Base (10):

DDR-0000151-01, DDR-0000152-01, DDR-0000153-01...

5 Click in the white space to apply these changes.

PlateTag immediately recognizes the addition of the new counter.

Cloning a barcode

IMPORTANT The optional barcode reader is required for cloning, and it must be set up to decode the barcode format that you want to read.

How the cloning process works

1 The barcode on the existing label is read by the barcode reader.

2 The barcode information in the label is decoded to text.

3 The text is copied to the barcode field that will be printed on the new label.

4 The text is encoded using the new symbology.

5 The new label is printed and applied, either on a different side of the microplate or the same side of the microplate over the top of the existing label.

Guidelines for barcode cloning

• You can clone barcodes only. Text fields cannot be read by the barcode reader.

• The side of the microplate that you select be cloned must contain a label with a barcode.

• If you want the label that contains the cloned barcode to also have text fields that match those on the label from which the clone was created, you must set up the schema to replicate those fields, using constants and counters.

Procedures

The software contains predefined clones that you can use to clone a barcode from any side of a microplate. When you configure a schema, you specify the variable name of the clone you want to use.

To view the predefined clones:

1 In the **PlateTag** window, click the **Schemas** tab at the bottom of the page.

2 Click the **Clones** tab. The predefined clones appear.

When you configure the schema, you select the clones data type, and then add the clone's variable name.

Related topics

For information about...	See...
Label formats	"About label formats and content" on page 92
Schemas	• "PlateTag–creating a schema" on page 126 • "PlateTag–configuring a schema" on page 128
Data source definition and types	"PlateTag–using data sources" on page 119
PlateTag batch labeling workflow	"PlateTag print job workflow" on page 114
Checking which barcode formats the reader can currently decode	Automation Solutions Technical Support
How to report problems	"Reporting problems" on page 176

PlateTag—creating a schema

About this topic

Before you can create a batch print job in PlateTag, you must create and configure one or more schemas. This topic describes how to create, update, copy, and delete a PlateTag schema.

Creating a schema

To create a schema:

1   In the **PlateTag** window, click the **Schemas** tab at the bottom of the page.

2   Click **Create new schema**.

3   In the **Schema** list, replace the text `New Schema #n` with a name of your choice.
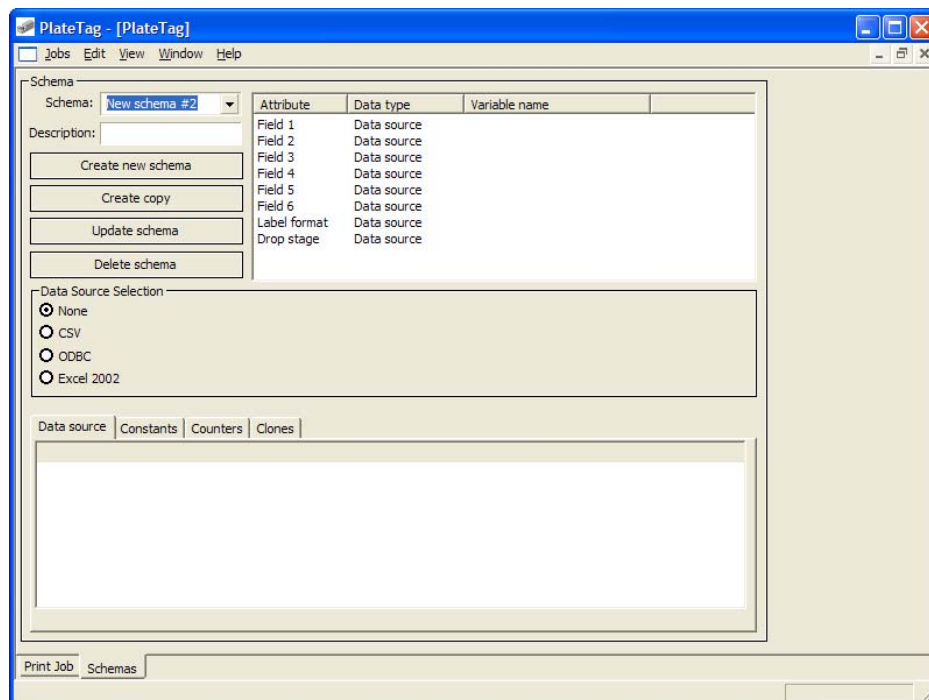
4 Click **Rename schema**.

The button label changes to **Update schema** and the schema is created.

When a new schema is created, the information in the Data source tab is cleared.

Saving changes to a schema

Updating a schema is the same as saving a changed schema.

To update a schema after making changes:

1 In the **Schemas** tab, click **Update schema**.

Copying and renaming a schema

To create a new schema that is similar to an existing one, you can copy the existing schema to use as a starting point for creating a new one.

To copy and rename a schema:

1 In the **Schemas** tab, click **Create copy**.

The schema is saved to the specified location. The schema name is prefixed by the text *Copy of* (for example, Copy of schema one). For details on schema file storage, see "PlateTag–setting file locations" on page 115.

2 In the **Schema** list, select the copy, and then type a new name.

3 Click **Rename schema**.

Deleting a schema

You can delete schemas that you no longer want to use.

To delete a schema:

1 In the **Schemas** tab, select the schema from the **Schema** list.

2 Click **Delete schema**.

Related topics

For information about...	See...
Label formats	"About label formats and content" on page 92
Defining the contents of a schema	"PlateTag—configuring a schema" on page 128
The drive location of saved schemas	"PlateTag—setting file locations" on page 115
PlateTag batch labeling workflow	"PlateTag print job workflow" on page 114
How to report problems	"Reporting problems" on page 176

PlateTag—configuring a schema

About this topic

When you configure a PlateTag schema, you specify the label format, the data content, and the vertical position of the plate stage. You must configure a schema before using the schema in a PlateTag print job.

About defining fields

Define only the fields that you want to print on your barcode label. If you do not want to define a field, leave the default settings in the Data type column.

Before you start

Before configuring a schema, make sure you complete the following:

• If you plan to use a data source for the label data, create the data source. See "PlateTag—using data sources" on page 119.

• If you plan to use any constants, counters, and clones, set up the parameters for the label content. See "PlateTag—setting parameters for the label content" on page 122.

- Determine which fields are used in the label format you intend to use in the schema.

IMPORTANT The information that is printed on a label depends on the fields that you configure in the schema as well as the fields used in the label format. If a field is not defined in the label format, it will not be printed even if you configure it in the schema.

Procedures

This section contains the following procedures:
- Configuring constants, counters, and clones in a schema
- Configuring a data source in a schema

Configuring constants, counters, and clones in a schema

To configure constants, counters, and clones in a schema:

1 In the **PlateTag** window, click the **Schemas** tab, and select a **Schema** from the list.

Alternatively, to create a new schema, click **Create new schema**. In the **Schema** box, type a name for the new schema, and then click **Rename schema**.

2 Set the properties for the **Field** attributes that you want to use as follows:

a Click twice in the **Data type** column. From the list, select the data type (constants, counters, or clones), and then click in the white space outside the list to accept the choice.
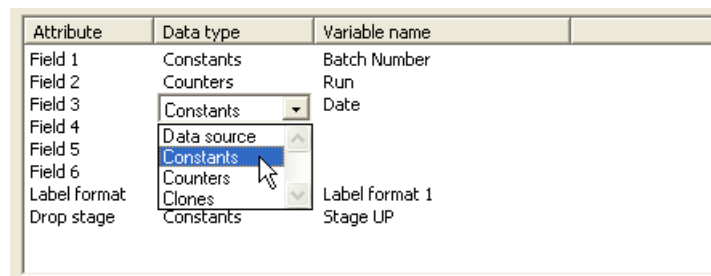
b Click twice in the **Variable name** column, and then select the variable name from the list.

The variable name represents one of the variables defined in the constants, counters, or clones. The variable name points to the source of the actual data to be printed.
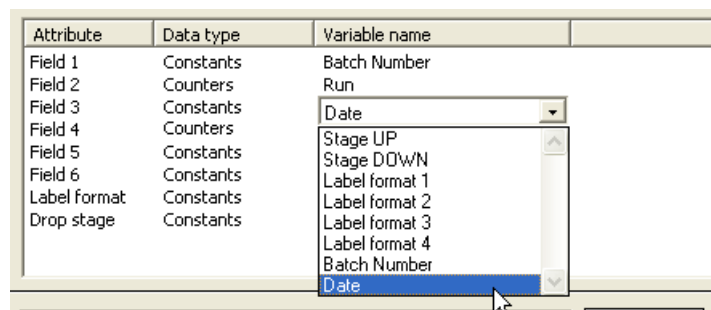
3 For the **Label format** attribute, select one of the four predefined constants for label format:

Variable name	Constant value
Stage UP	0
Stage DOWN	1
Label format 1	1
Label format 2	2
Label format 3	3
Label format 4	4

If you are using more than four label formats, see "PlateTag—creating a new label format constant" on page 132 for details on setting properties for additional label formats in the schema.

IMPORTANT The constant value for a label format must be the format number not a format name.

4 For the **Drop stage** attribute , select one of the predefined constants:

- *Stage UP.* Moves the plate stage to the top position at the time the microplate is labeled.

- *Stage DOWN.* Moves the plate stage to the bottom position at the time the microplate is labeled.

The height of the plate stage when a label is applied to a microplate is determined by both the mechanical height adjustment of the plate stage and the Drop stage attribute in the schema.

5 When you are finished configuring the schema, click **Update schema** to save the changes.

Configuring a data source in a schema

This procedure describes how to open a CSV file to use as a data source for the content of labels that you print using PlateTag. If you have not already set up the data source file, see "PlateTag—using data sources" on page 119 before continuing with the following procedure.

*To configure a data source in a schema:*

1 In the **PlateTag** window, click the **Schemas** tab, and select a **Schema** from the list.

Alternatively, to create a new schema, click **Create new schema**. In the **Schema** box, type a name for the new schema, and then click **Rename schema**.

**2** To specify the location of the CSV file:

a In the **Data Source Selection** area, select **CSV**.

b Click **Browse**, and then select the file in the **Open** dialog box.

The data from the CSV file appears in the Data source tab.

Note: If you want to specify ODBC instead of CSV, you would select ODBC, and then enter the Connection string and SQL Statement.
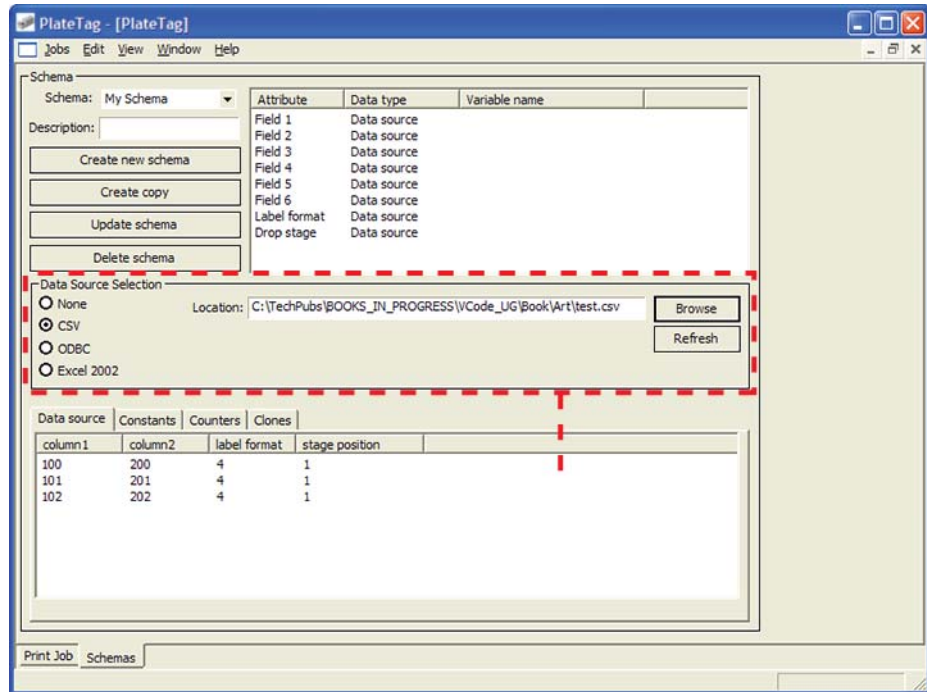
3 For each schema attribute that you want to use (Field, Label format, or Drop stage):

   a Click twice in the **Data type** field. From the list, select data source.

   b Click twice in the **Variable name** field, and then select the name from the list. The list contains the names of the column headings from the data source.
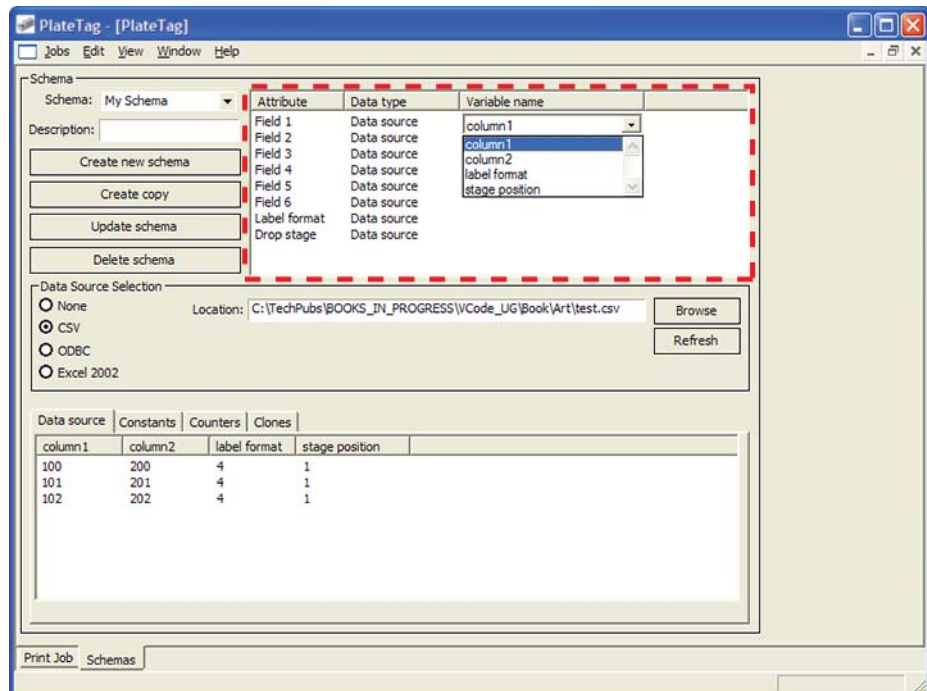
4 Click **Update schema** to save the changes.

Related topics

For information about...	See...
Label formats	"About label formats and content" on page 92
PlateTag batch labeling workflow	"PlateTag print job workflow" on page 114
Schemas	• "PlateTag print jobs and schemas" on page 116 • "PlateTag–creating a schema" on page 126
Setting up a data source	"PlateTag–using data sources" on page 119
Constants, counters, and barcode clones	"PlateTag–setting parameters for the label content" on page 122
Defining a print job in PlateTag	"PlateTag–creating a print job" on page 134
Setting the label format property in PlateTag	"PlateTag–creating a new label format constant" on page 132
How to report problems	"Reporting problems" on page 176

PlateTag—creating a new label format constant

About this topic

PlateTag contains four label format constants for which the properties are predefined. If you are using more than the four label formats, read this topic to learn how to set properties for additional label formats using constants.

Note: You do this when create a PlateTag schema.

Label format property

Before you can complete a schema, you define the Label format property by setting the constant value for the property.

Any data type can be used for the label format, but it is easiest to use a constant.

To set the label format:

1 Create a constant for the format using the same number as the number of the label format that is stored in the printer. To do this:

    a In the **Constants** tab, click **Add new constant**.

b In the **Variable name** column for the new constant, type a name. For example, type Label format 5.

c In the **Constant value** column for the new constant, click twice, and then type the new value. For example, type 5 for label format 5.
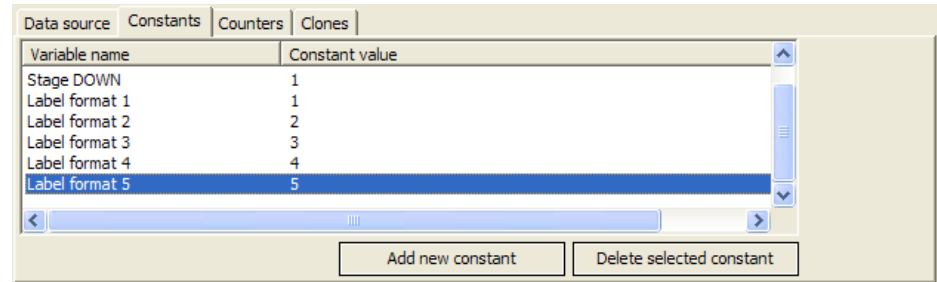
IMPORTANT The constant value for a label format must be the format number not a format name.

2 Select the constant for the Label format field as follows:

a In the **Data type** column for the **Label format** attribute, select **Constants**.

b In the **Variable name** column, select the Variable value that you used when creating the constant.

Related topics

For information about…	See…
Label formats	"About label formats and content" on page 92
PlateTag print job workflow	"PlateTag print job workflow" on page 114
Schemas	• "PlateTag–creating a schema" on page 126 • "PlateTag–configuring a schema" on page 128
Setting up a data source	"PlateTag–using data sources" on page 119
Constants, counters, and barcode clones	"PlateTag–setting parameters for the label content" on page 122

For information about...	See...
Defining a print job in PlateTag	"PlateTag–creating a print job" on page 134
How to report problems	"Reporting problems" on page 176

PlateTag—creating a print job

About this topic

This topic defines PlateTag print jobs, and describes how to create, save and open them.

About print jobs

A print job is used to designate a schema to be used for labeling each side of a microplate. You can use a different schema for each side of a microplate, or you can use the same schema for one or more sides of a microplate.

You can label more than one type of labware in a print job, even if the labware is of varying heights. However, if the labware requires different plate stage heights, you must use a data source in the schema to control the drop stage attribute during the print job.

Before you start

Before defining a print job in PlateTag, you must:

• Create one or more schemas

• Create the label format for the print job

Creating a print job

To create a print job:

1 In the **PlateTag** window, choose **Jobs** > **New**.

Any existing schemas listed in the Data Schema Selection table are cleared.
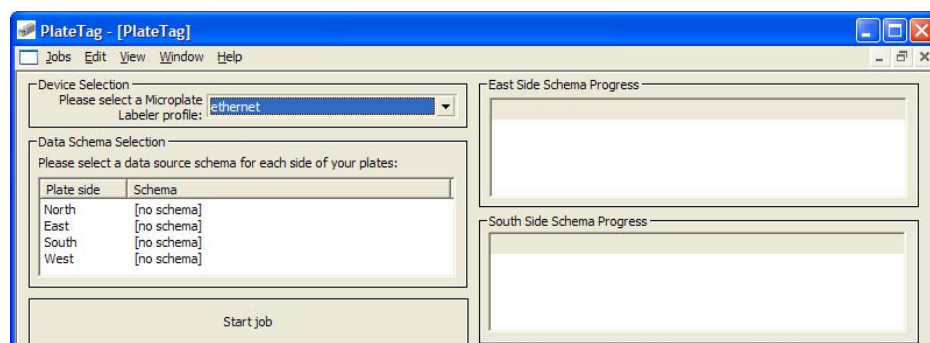
2 Under **Device Selection**, select the profile for the Microplate Labeler.

3 Under **Data Schema Selection**, define the schema for each side of the microplate that you want to label as follows:

    a Select the row corresponding to the first side of the microplate that you want to label.

    b Click twice in the **Schema** column, and then select the schema to use from the list.

Repeat this step for any other sides of the microplate to be labeled. Select [no schema] for the sides that will not be labeled.

Saving a print job

To save a print job:

1 In the **PlateTag** window, choose **Jobs** > **Save** or press CTRL+S.

2 In the **Save as** dialog box, specify the storage location and name for the file, and then click **Save**.

Opening a print job

To open a print job:

1 In the **PlateTag** window, choose **Jobs** > **Open** or press CTRL+O.

Only one print job can be open at a time.

Related topics

For information about...	See...
The label format for the print job	• "About label formats and content" on page 92 • "PlateTag–creating a new label format constant" on page 132
Schemas	• "PlateTag–creating a schema" on page 126 • "PlateTag–configuring a schema" on page 128
Constants, counters, and barcode clones	"PlateTag–setting parameters for the label content" on page 122
PlateTag batch labeling workflow	"PlateTag print job workflow" on page 114
Defining a print job in PlateTag	"PlateTag–creating a print job" on page 134
Starting the labeling operation for a production run	"PlateTag–starting a print job" on page 137
How to report problems	"Reporting problems" on page 176

PlateTag—test printing in sticky mode

About this topic

PlateTag includes a green button "sticky" mode that you can use for testing. When you push the green button in sticky mode, the button remains on until the test is completed or aborted.

In sticky mode you can print multiple labels to preview the data stream that would be generated during a future production print job. The Microplate Labeler repeatedly labels the same microplate. For example, the data from the external data source, constants, counters, and clones can be printed and applied sequentially.

This topic explains how to use the sticky mode.

Procedure

To test print using sticky mode:

1   In the **PlateTag** window, set up a print job that conforms to your test requirements.

2   Select **Edit** > **Preferences**. The PlateTag Preferences dialog box appears.

3   In the **Jobs** tab, select **Enable sticky mode**, and then click **OK**.

4   Place a test microplate on the plate stage.

5   In the **Print Job** tab of the **PlateTag** window, click **Start job**.

   If the schema data type is a data source, go to step 7. Otherwise, continue to step 6.

6   In the dialog box that appears, type the number of microplates that will eventually be labeled in the actual print job.

7   Press the green button to start the test. The Microplate Labeler prints and applies labels to the test microplate the specified number of times.

To stop a sticky mode labeling test:

1   In the **Print Job** tab of the **PlateTag** window, click **Abort job**.

Related topics

For information about...	See...
Performing a test print using Microplate Labeler Diagnostics	"Performing a print-and-apply test" on page 146
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
PlateTag print job workflow	"PlateTag print job workflow" on page 114
How to report problems	"Reporting problems" on page 176

PlateTag—starting a print job

About this topic

After the Microplate Labeler is completely set up and a print job has been created, you can perform a production print job in which a batch of microplates is labeled on one or more sides. This topic describes how to open and start a print job using the PlateTag software.

Before you start

Before starting a production printing job, perform a test print to make sure that:

* The label is positioned correctly on the labware
* The data fits on a label
* The human-readable text can be read by a person
* The barcode can be read by a barcode reader

Starting a print job

To start a print job:

1 In the **PlateTag** window, choose **Jobs** > **Open**, and then select the print job.

You can have one print job open at a time.

2 In the **Print Job** tab, click **Start job**.

Start job
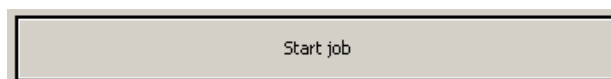
3 If your schemas do not use a data source, type the number of microplates for the run in the **Job Size Request** dialog box, and then click **OK**.

Job Size Request
Please enter the total number of plates in this job: 1
OK   Cancel job
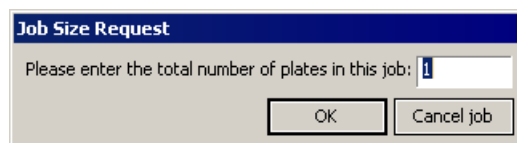
If your schemas use a data source, PlateTag assumes that the number of microplates that you want to label is the same as the number of data rows in the data source.

4 Place a microplate on the plate stage and press the green button.

One or more labels are printed and applied to the microplate.

In the **Print Job** tab, view the progress of batch labeling operation in the status bar.

Print Job | Schemas
Please place the next plate on the stage and then press the green button.   33.33%
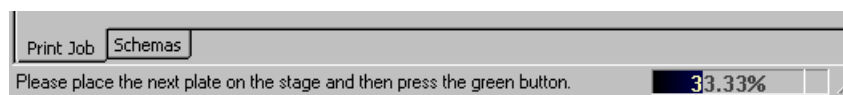
Repeat this step for each microplate in the print job.

Related topics

For information about...	See...
The location of the green button	"Hardware overview" on page 12
Placing a microplate	"Placing a microplate on the plate stage" on page 80
PlateTag print job workflow	"PlateTag print job workflow" on page 114
Labeling microplates with identical labels	"PlateTag–labeling microplates with identical labels" on page 139
Using the PlateTag stick mode	"PlateTag–test printing in sticky mode" on page 136
VWorks software	*VWorks Automation Control User Guide*
BenchWorks software	*BenchWorks Automation Control User Guide*
Performing a test print using Microplate Labeler Diagnostics	"Performing a print-and-apply test" on page 146

PlateTag—labeling microplates with identical labels

About this topic

This topic explains how to set up a batch print job in PlateTag that uses a data source to print groups of microplates with the same labels.

If you are using the VWorks software or BenchWorks software, see the *VWorks Automation Control User Guide* or *BenchWorks Automation Control User Guide* for details on how to set up and run labeling protocols.

Example

You may want to label groups of microplates in a batch run, where each microplate in the group has the same label. The following example has groups of three identical microplates in an incrementing batch run:

> AB123, AB123, AB123, CD324, CD324, CD324, JF942, JF942, JF942

Normally, each microplate is labeled with a unique label using data from a new row in the data source, such as:

> AB123, CD324, JF942

If you run the same print job in the normal mode three times, the microplates will be labeled like this:

> AB123, CD324, JF942, AB123, CD324, JF942, AB123, CD324, JF942.

This is inconvenient because you must shuffle the microplates to get them into the desired order.

The procedure in this topic shows you how to create subsets of identically labeled microplates.

Before you start

This procedure assumes that PlateTag software is already running and that one of the schemas used for the print job uses a data source.

If you are using more than one external file (data source) to label multiple sides of the microplates, the data source files must contain the same number of rows.

Procedure

To print subsets of identically labeled microplates in a batch run:

1 In the **PlateTag** window, choose **Edit** > **Preferences**. The Edit Preferences dialog box appears.

2 Click the **Jobs** tab.

3 Under **Data Sources**, select **Prompt for duplication of data source entries**, and then click **OK**.

4 In the **PlateTag** window, click the **Print Job** tab.

5 Click **Start job**.

6 In the dialog box that appears, type the number of additional copies of each barcode that you want to print, and then click **OK**.

Data Source Duplicates Request

Please enter the number of duplicate plates to create: 0   OK

For example, if you want to have three microplates in the group, as in the example earlier in this topic, type 2, where,

1 original + two duplicates = 3

Related topics

For information about...	See...
The location of the green button	"Hardware overview" on page 12
Placing a microplate	"Placing a microplate on the plate stage" on page 80
PlateTag print job workflow	"PlateTag print job workflow" on page 114
Starting the print job	"PlateTag—starting a print job" on page 137
Using the green button sticky mode	"PlateTag—test printing in sticky mode" on page 136
Performing a test print using Microplate Labeler Diagnostics	"Performing a print-and-apply test" on page 146

7
Maintenance and troubleshooting

This chapter provides maintenance and troubleshooting information for the Microplate Labeler.

The topics are:

Agilent Technologies

Routine maintenance

About this topic

Preventive maintenance is an important part of keeping the Microplate Labeler running smoothly and error free. This topic describes the periodic routine maintenance you should perform.

Contact Automation Solutions Technical Support if you are unable to resolve problems.

Routine inspection and maintenance

Your maintenance schedule can vary depending on the frequency of Microplate Labeler use. In general, you should perform routine maintenance tasks when you replace the printer ribbon and labels.

Maintenance task	Schedule	See...
Check the air-pressure level at the Microplate Labeler. *Symptom.* Insufficient air pressure or problems picking and placing the labels.	Daily	"Checking the basic applicator functions" on page 144
Clean the Microplate Labeler. *Symptom.* Dust, grime, or chemical deposits on exterior.	When replacing printer media	"Cleaning the Microplate Labeler exterior" on page 153
Clean the print roller. *Symptom.* Impairment of label advancement or degradation of print quality.	When replacing printer media	"Cleaning the printer components" on page 155
Clean the printhead. *Symptom.* Degradation of print quality, contrast, or vertical stripes.	When replacing printer media	"Cleaning the printer components" on page 155
Clean the applicator head. *Symptom.* Dust and grime on applicator head.	When replacing printer media	"Cleaning the Microplate Labeler exterior" on page 153
Clean and inspect the vacuum pads. *Symptom.* Problems picking up labels from the printer or placing labels on labware.	Every three months	"Cleaning and replacing the vacuum pads" on page 160
Replace the vacuum pads. *Symptom.* Cracked or worn pads.	Annually	"Cleaning and replacing the vacuum pads" on page 160

Maintenance task	Schedule	See...
Replace the labels and thermal transfer ribbon. *Symptom.* End of media rolls.	As required	"Loading labels and ribbon" on page 50

Related topics

For information about...	See...
Hardware overview	"Hardware overview" on page 12
Safety	"Safety guidelines" on page 1
Troubleshooting hardware problems	"Troubleshooting hardware problems" on page 167
Resolving error messages	"Resolving error messages" on page 171
Reporting problems	"Reporting problems" on page 176

Checking the basic applicator functions

About this topic

This topic describes how to use Microplate Labeler Diagnostics to verify the performance of basic applicator functions. You can perform this procedure at any time to double-check the applicator functions or to help troubleshoot problems.

Before you start

The following procedure assumes that:

- Microplate Labeler Diagnostics is open. For details, see "Opening Microplate Labeler Diagnostics" on page 75.

- The profile for your device is initialized. For details, see "Initializing a profile" on page 78.

Procedure

You can use the I/O Functions tab in Microplate Labeler Diagnostics to test basic applicator functions.
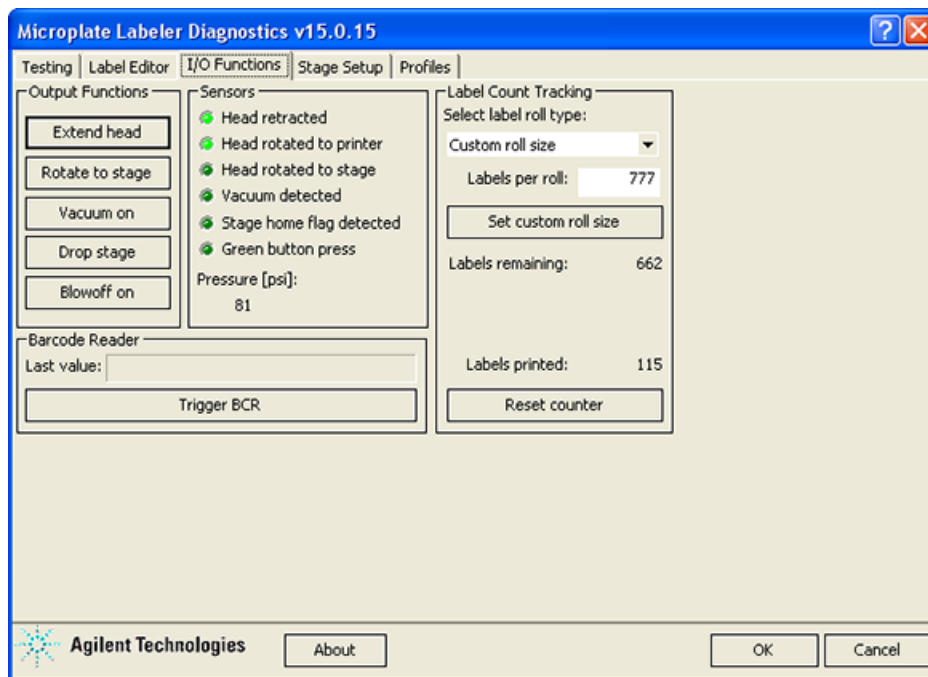
To test basic applicator functions:

1   In the **Microplate Labeler Diagnostics** window, click the **I/O Functions** tab.

2   Under **Output Functions**, click a toggle button to perform the corresponding task and verify that the corresponding indicator lights in the **Sensors** area.

Click the toggle button again to return to the original position.

> **CAUTION** Before rotating the head, make sure that it is retracted and that a short side of plate stage is facing you as you stand in front of the device. Otherwise, the applicator head will hit the plate stage.

Button	Description
Extend head/Retract head	Extends or retracts the applicator head.
	In the Sensors area, the Head retracted light turns on when the applicator head is retracted.
Rotate to stage/ Rotate to printer	The applicator head rotates to the plate stage or the printer. In the Sensors area, the Head rotated to printer or the Head rotated to stage light turns on to indicate the current position of the applicator head.
Vacuum on/Vacuum off	Turns on or off the vacuum for the vacuum pads on the applicator head.
	If the vacuum is turned off when a label is attached to the vacuum pads, the label can drop.
	If the vacuum pads are pressed against a surface, such as a label, while the vacuum is on, the Vacuum detected light turns on.
Drop stage/Raise stage	Raises or lowers the plate stage.
Blowoff on/Blowoff off	Starts or stops a stream of air through the vacuum pads on the applicator head.
	If the air flow is on when a label is attached to the vacuum pads, the label is pushed off.

3 While observing the **Green button press** indicator in the **Sensors area**, press and hold the green button on top of the device. The Green button press light should turn on.

Note: If a print job has been created, pressing the green button will start the labeling operation.

4 Under **Pressure (psi)**, verify that the air pressure readout is correct: 80 psi (0.55 MPa), minimum.

- *If the readout is <80 psi.* Verify that the air source is supplying 80 psi (0.55 MPa), minimum. If the source is above 80 psi and the readout is below 80 psi, use the pressure regulator knob on the back of the applicator to increase the pressure.

- *If the readout is >87 psi.* Use the pressure regulator knob on the back of the applicator to lower the pressure to 85 psi (0.58 MPa), maximum.

Related topics

For information about...	See...
Resetting the air pressure	"Setting the air pressure" on page 42
Rotating the plate stage	"Using plate stage controls in Diagnostics" on page 149
Plate stage and applicator head	"About plate stage and applicator head positions" on page 81
Raising or lowering the plate stage	"Setting the plate stage vertical positions" on page 84
Microplate Labeler Diagnostics controls and indicators	"Quick reference to Diagnostics software" on page 179
Troubleshooting problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Performing a print-and-apply test

About this topic

This topic describes how to perform a print and apply test using the Testing tab in Microplate Labeler Diagnostics.

When to do a test print

Perform a print-and-apply test when first setting up your Microplate Labeler, after creating a new label format, when loading new labels and ribbon, or when troubleshooting printing problems.

Testing helps you detect problems such as:

- Incorrect height settings for the plate stage
- Incorrectly loaded label or ribbon
- Poorly designed label formats, for example, overlapping fields, barcodes that are too large for the label, missing barcodes, or text fields that are too small to read

Before you begin

The following procedure assumes that:

- Microplate Labeler Diagnostics is open. For details, see "Opening Microplate Labeler Diagnostics" on page 75.
- The profile for your device is initialized. For details, see "Initializing a profile" on page 78.

IMPORTANT Field data entered in the Testing tab of Microplate Labeler Diagnostics is stored temporarily in the computer and not the printer, so it can be used for testing purposes only.

Procedure

To print a label from the Testing tab:
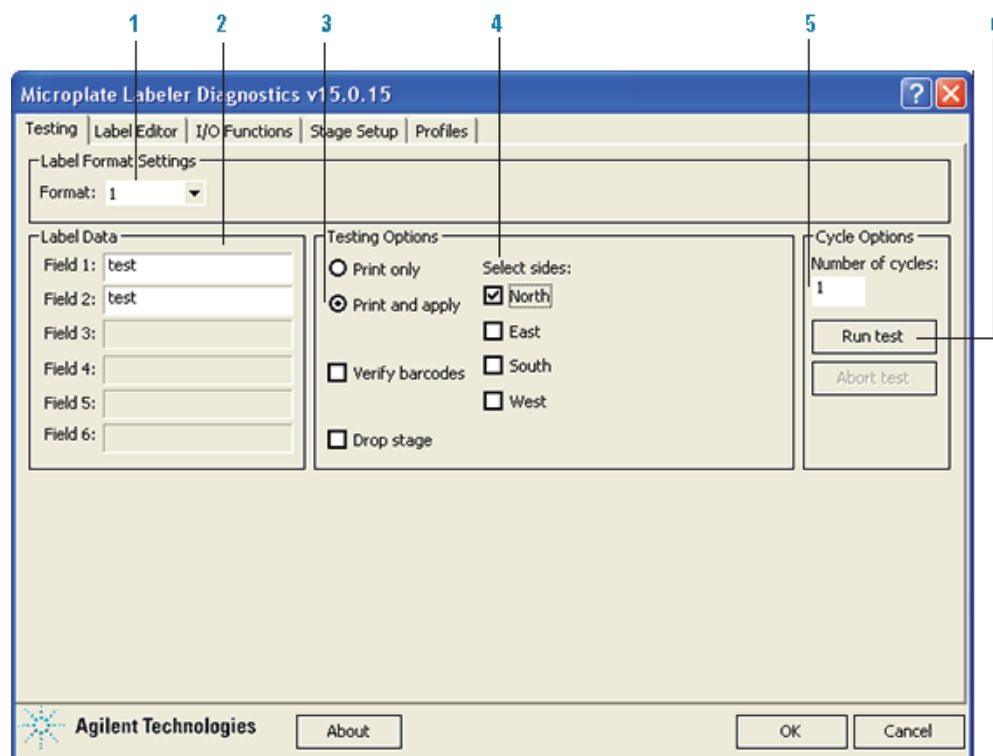
1 In the **Testing** tab, verify that the label format you want to use for this test is selected in the **Format** list.

Note: You can display a preview of the label format in the Label Editor tab.

2 Under **Label Data**, type the text in the field box for the position that you want to test.

Note: Only the fields that are defined in the label format can be edited. Fields that are defined in the label format as barcode fields will be encoded into a barcode before printing.

3 In the **Testing Options** area, select **Print and apply**.

4 Select the compass points corresponding to one or more sides that you want to apply labels to, for example **North** and **West**.

A1 well
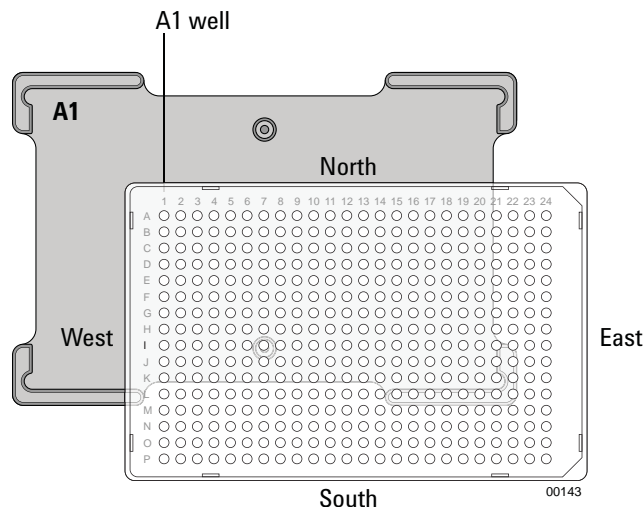
IMPORTANT Make sure that the height of the plate stage is suitable for the type of microplate being labeled, and that there is a microplate on the plate stage.

5 In the **Number of cycles** list, set the value to the number of microplates that you want to test label.

6 Click **Run test** or press the green button on the top of the device.

The first label is printed and applied to the microplate.

7 If you are test labeling multiple microplates, quickly replace the microplate on the plate stage with a new one.

Repeat this step until all the test cycles are completed.

Related topics

For information about…	See…
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Placing a microplate	"Placing a microplate on the plate stage" on page 80
Adjusting the height of the plate stage	"Setting the plate stage vertical positions" on page 84
The overall process of designing a label format	"Creating and editing label formats" on page 94
Running a labeling protocol	• *VWorks Automation Control User Guide* • *BenchWorks Automation Control User Guide*
Using PlateTag software to print and apply labels	"PlateTag print job workflow" on page 114

For information about...	See...
Microplate Labeler Diagnostics controls and indicators	"Quick reference to Diagnostics software" on page 179
Troubleshooting problems	"Troubleshooting hardware problems" on page 167

Using plate stage controls in Diagnostics

About this topic

The plate stage controls in Microplate Labeler Diagnostics are useful when setting up the Microplate Labeler, troubleshooting, or performing maintenance on the Microplate Labeler.

This topic describes how to use the Stage Setup tab to perform the following procedures:

- "Enabling and disabling plate stage auto-repositioning" on page 150
- "Rotating the plate stage using stage controls" on page 150
- "Moving the plate stage to a teachpoint" on page 151

Figure   Stage Setup tab in Microplate Labeler Diagnostics
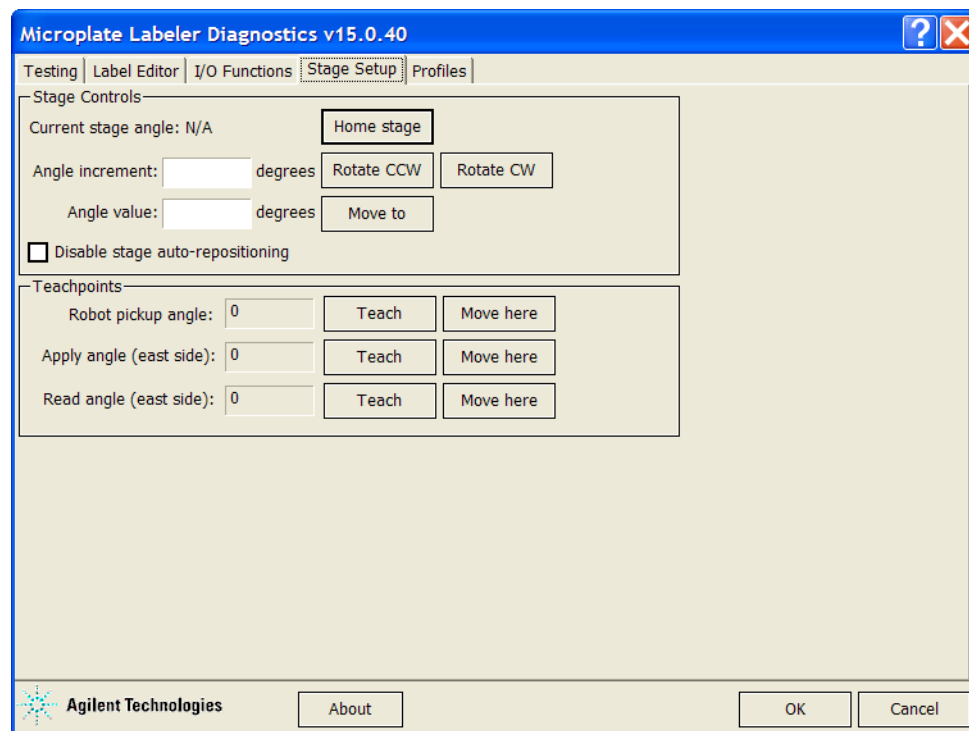
Before you begin

> **CAUTION**   Before moving the plate stage, make sure that the applicator head is not in the rotation path of the plate stage.

The following procedure assumes that:

*   Microplate Labeler Diagnostics is open. For details, see "Opening Microplate Labeler Diagnostics" on page 75.
*   The profile for your device is initialized. For details, see "Initializing a profile" on page 78.

Enabling and disabling plate stage auto-repositioning

By default, plate stage auto-repositioning is enabled. If the plate stage is moved from a position by an outside force (for example, if someone rotates the stage by hand), the auto-repositioning feature automatically moves the plate stage back to the last angle.

When setting up the device, troubleshooting, or performing maintenance on the Microplate Labeler, you can disable the auto-repositioning feature.

To disable plate stage auto-repositioning:

1   In the **Stage Setup** tab under **Stage Controls**, select the **Disable stage auto-repositioning** check box.

When auto-repositioning is disabled, any disturbances that cause the plate stage to rotate will not be corrected until another move is commanded.

To enable plate stage auto-repositioning:

1   In the **Stage Setup** tab under **Stage Controls**, clear the **Disable stage auto-repositioning** check box.

Rotating the plate stage using stage controls

To rotate the plate stage:

1   Ensure that the applicator head is pointing towards the printer.

If the applicator head is pointing towards the plate stage:

a   In **Microplate Labeler Diagnostics**, click the **I/O Functions** tab.

b   Click **Rotate to printer**.

The applicator head rotates towards the printer, moving it out of the plate stage rotation path.

2   Move the plate stage in one of the following ways:

- *To move relative to the current position.* Under **Stage Controls**, type a value in the **Angle increment** box, and then click **Rotate CCW** (counterclockwise) or **Rotate CW** (clockwise).
- *To move to a specific angle.* Type a value in the **Angle value** box, and then click **Move to**.
- *To rehome the plate stage.* Click **Home stage**.

Moving the plate stage to a teachpoint

1 Ensure that the applicator head is pointing towards the printer.

If the applicator head is pointing towards the plate stage:

a In **Microplate Labeler Diagnostics**, click the **I/O Functions** tab.

b Click **Rotate to printer**.

The applicator head rotates towards the printer, moving it out of the plate stage rotation path.

2 Click the **Stage setup** tab.

3 Make sure that **Disable stage auto-repositioning** is not selected.

4 Click **Move here** on the same row as the teachpoint to which you want to move.

The plate stage moves to the position.

Related topics

For information about...	See...
Plate stage and head positions	"About plate stage and applicator head positions" on page 81
Changing the robot pickup angle	"Setting the robot pickup angle teachpoint" on page 88
Microplate Labeler Diagnostics controls and indicators	"Quick reference to Diagnostics software" on page 179
Troubleshooting problems	"Troubleshooting hardware problems" on page 167

Testing the barcode reader using Diagnostics

About this topic

If you have installed the optional barcode reader on the Microplate Labeler, you can use the following procedure to test the reader.

Before you begin

The following procedure assumes that:

- Microplate Labeler Diagnostics is open. For details, see "Opening Microplate Labeler Diagnostics" on page 75.
- The profile for your device is initialized. For details, see "Initializing a profile" on page 78.

Procedure

To test the barcode reader using Microplate Labeler Diagnostics:

1 In the **I/O Functions** tab, under **Barcode Reader**, click **Trigger BCR**.
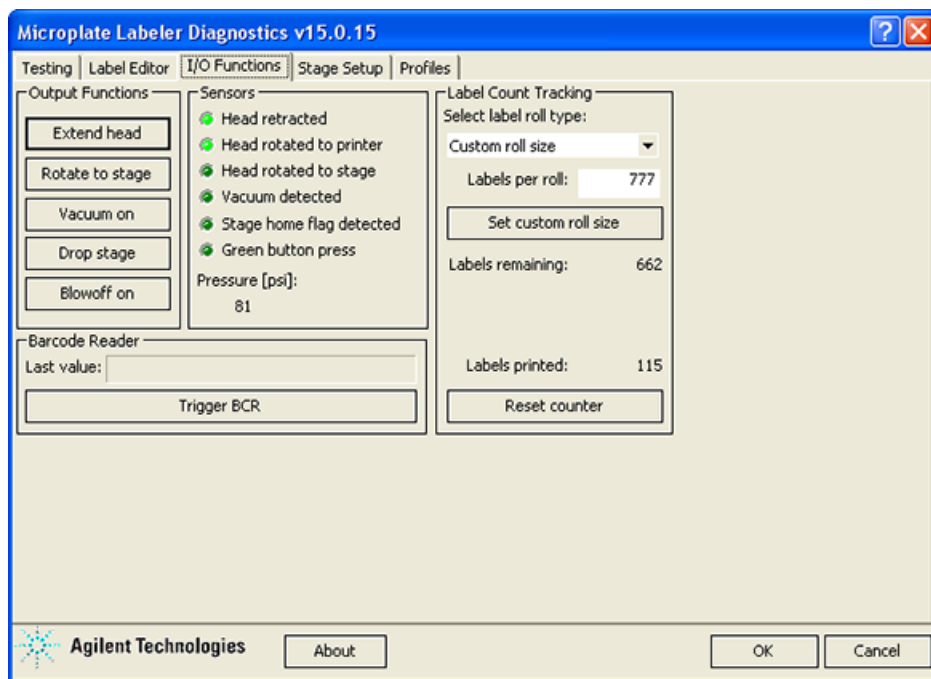
Note: If the button is unavailable, either the barcode reader was not detected during initialization, the Microplate Labeler was not previously initialized, or a microplate with a barcode label was on the plate stage during initialization.

2 In the **Last value** box, check the displayed result.

If you receive an error, make sure that the barcode reader's laser lines are aligned with the label. For assistance, contact the Automation Solutions Technical Support.

3 Move the plate stage so that another side of the microplate is exposed to the reader, and repeat the test.

Read angle information

The read angle is the position of the plate stage when a label is being read. This angle was set at the factory and should not require adjustment. You can view the setting for Read angle (east) teachpoint in the Stage Setup tab. This teachpoint specifies the angle to which the plate stage rotates so that the east side faces the optional barcode reader. To move the plate stage so that each of the other sides face the barcode reader, the software uses angles 90- , 180- , and 270-degrees from the teachpoint.

If barcodes cannot be read on all four sides of the microplate the read angle is not optimal. Contact the Automation Solutions Technical Support for assistance.

Related topics

For information about...	See...
Microplate Labeler Diagnostics controls and indicators	"Quick reference to Diagnostics software" on page 179
Troubleshooting problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Cleaning the Microplate Labeler exterior

About this topic

This topic provides guidelines for periodic routine cleaning of the Microplate Labeler applicator to remove dust, grime, or chemical deposits on the exterior.

Before you begin

Safety warnings

⚠️ **WARNING**   **To avoid risk of electric shock, turn off the Microplate Labeler and disconnect the power cord before performing any maintenance or cleaning.**

CAUTION   Do not use harsh abrasives, corrosive cleaning agents, or metal brushes to clean any Microplate Labeler component or accessory. The printer can be damaged by aggressive cleansers. Do not use abrasive cleaners, ethanol, or other solvents for cleaning the external surfaces or modules of the printer.

Required tools or equipment

- Standard laboratory wipes
- Mild soap-and-water solution
- Soft brush or vacuum cleaner

Procedure

To clean the Microplate Labeler:

1   If you have not already done so, shut down the Microplate Labeler and disconnect the power cord.

2   Clean the printer exterior as follows:

   a   Use standard laboratory wipes and a mild soap-and-water solution to clean the printer cover.

   b   Remove dust and paper fluff from the print area with a soft brush or vacuum cleaner.

3   To clean the painted white surfaces and the aluminum surfaces of the device, use standard laboratory wipes and a mild soap-and-water solution.

Related topics

For information about...	See...
Shutting down the Microplate Labeler	"Starting up and shutting down" on page 60.
Hardware overview	"Hardware overview" on page 12
Troubleshooting hardware problems	"Troubleshooting hardware problems" on page 167
Cleaning the printhead and print roller	"Cleaning the printer components" on page 155
Cleaning the applicator head vacuum pads	"Cleaning and replacing the vacuum pads" on page 160
Reporting problems	"Reporting problems" on page 176

Cleaning the printer components

About this topic

This topic describes how to clean the following Microplate Labeler printer components:

- *Print roller*. Accumulations of dirt on the print roller can impair the forward movement of the labels and ribbon and the impair the print quality.

- *Printhead*. Substances can accumulate on the printhead leading to degradation of print quality.

When to do this

Clean the printhead and print roller when you replace the rolls of ribbon and labels. Cleaning the printhead regularly helps to ensure a consistently good printed image and prevents premature wear of the printhead.

If the printer components appear damaged, contact Automation Solutions Technical Support.

Before you begin

Remove the labels and ribbon before you attempt to clean the printer components. For details, see "Loading labels and ribbon" on page 50.

Safety warnings

⚠ **WARNING**   **To avoid risk of electric shock, turn off the Microplate Labeler and disconnect the power cord before performing any maintenance or cleaning.**

⚠ **WARNING**   **The printhead is hot after use. To avoid risk of injury, ensure the printhead has cooled down before cleaning.**

CAUTION   To avoid damage to the printhead, do not use sharp or hard objects to clean printhead. Do not touch the protective glass layer of printhead with your fingers.

Required tools

- Isopropyl alcohol and soft cloth to clean the print roller
- Cleaning pen from the G5404B Microplate Labeler Media Kit to clean the printhead

  Alternatively, you can use a cotton swab dipped in isopropyl alcohol.

Procedure

The following figure shows the locations of the printer components referenced in this procedure.

Figure   Printhead and print roller locations
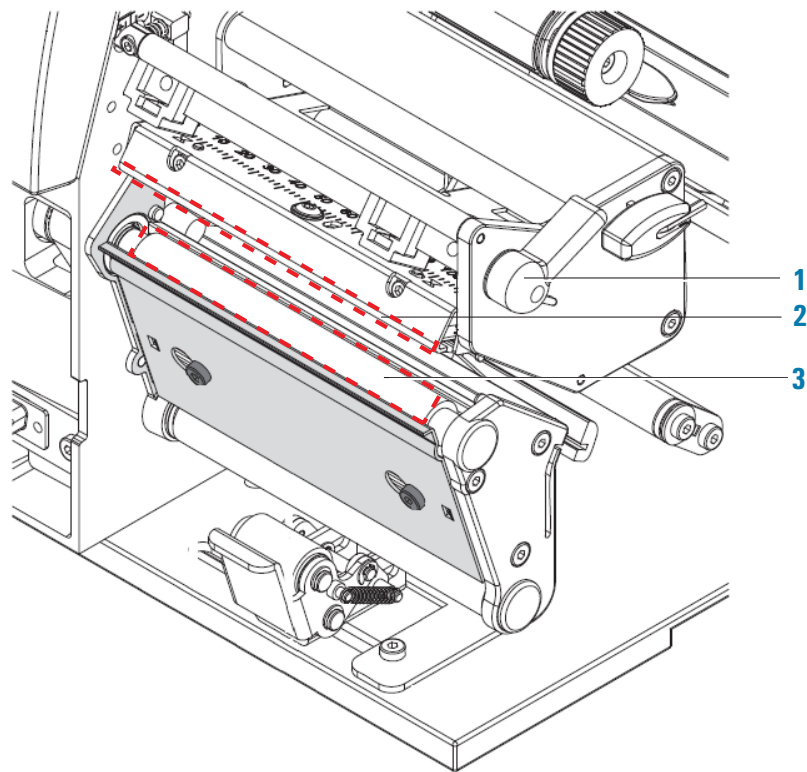
To clean the printer components:

1 Ensure the printhead lever (**1**) is turned counterclockwise lifting the printhead (**2**).

2 Use the special cleaning pen to clean the printhead surface (**2**). The printhead is the narrow bar that presses the image through the ribbon and onto the label as the media move into position on the print roller.

Alternatively, if you do not have the cleaning pen, use a cotton swab dipped in isopropyl alcohol.

3 Use isopropyl alcohol and a soft cloth to remove any deposits from the print roller (**3**).

IMPORTANT   Allow the printhead to dry for 2–3 minutes before using the printer.

Related topics

For information about...	See...
Shutting down the Microplate Labeler	"Starting up and shutting down" on page 60.
Removing and installing the labels and ribbon in the printer	"Loading labels and ribbon" on page 50
Resetting the label counter	"Resetting the label counter in the Diagnostics software" on page 157

For information about...	See...
Cleaning the Microplate Labeler exterior	"Cleaning the Microplate Labeler exterior" on page 153
Cleaning the applicator head vacuum pads	"Cleaning and replacing the vacuum pads" on page 160
Troubleshooting hardware problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Resetting the label counter in the Diagnostics software

About this topic

When you load a new roll of labels in the Microplate Labeler printer, you can reset the label counter Microplate Labeler Diagnostics to help you track the number of labels you use.

Before you begin

The following procedure assumes that:

- Microplate Labeler Diagnostics is open. For details, see "Opening Microplate Labeler Diagnostics" on page 75.
- The profile for your device is initialized. For details, see "Initializing a profile" on page 78.

Procedure

To reset the label counter:

1   In **Microplate Labeler Diagnostics**, click the **I/O Functions** tab.
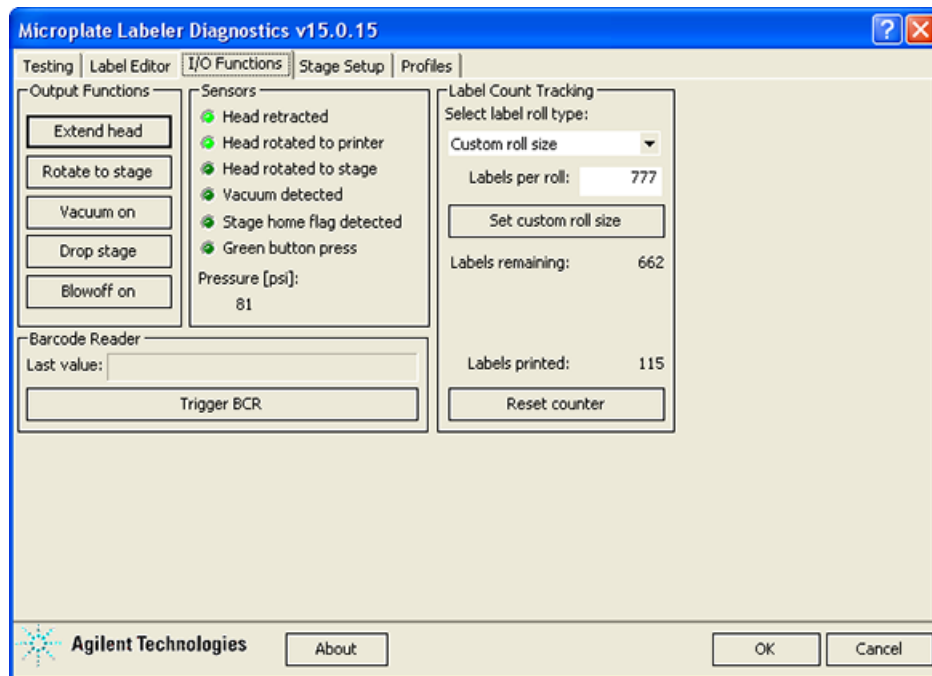
2 Under **Label Count Tracking**, click **Reset counter**.

3 In the **Select label roll type** list, select the size of the roll.

If you selected the Custom roll size, proceed to step 4.

4 Type the number of labels in the **Labels per roll** box, and then click **Set custom roll size**.

Related topics

For information about...	See...
Loading new labels	"Loading labels and ribbon" on page 50
Designing label formats	"Creating and editing label formats" on page 94
Microplate Labeler Diagnostics controls and indicators	"Quick reference to Diagnostics software" on page 179
Performing a print-and-apply test	"Performing a print-and-apply test" on page 146
Troubleshooting problems	"Troubleshooting hardware problems" on page 167

Adjusting the feed path of the ribbon

About this topic

Rarely, ribbon wrinkling can lead to print image errors. This topic describes how to make minor adjustments to the feed path of the ribbon.

Procedure

IMPORTANT   This adjustment should be performed during printing.

Figure   Setting the feed path of the ribbon
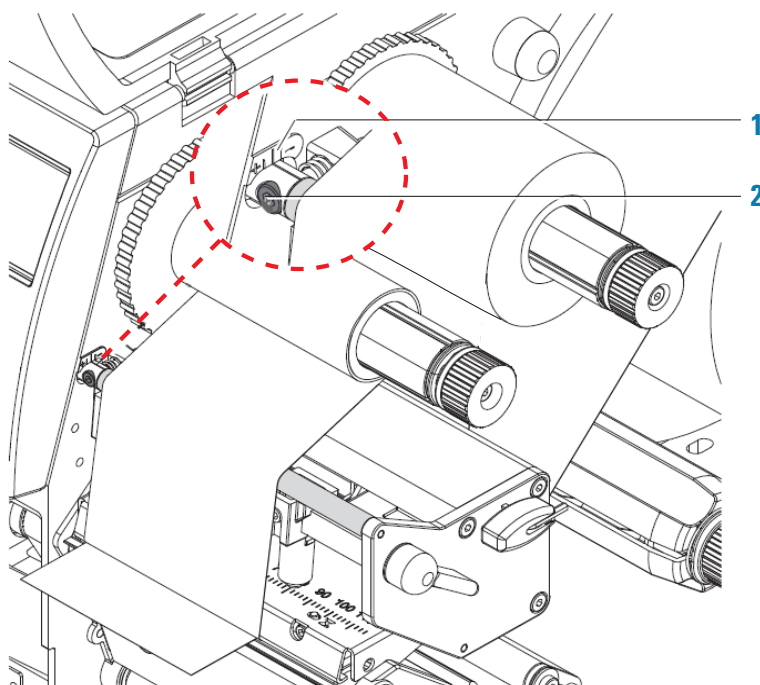
To set the feed path of the transfer ribbon:

1 Read the current setting on the scale (**1**) and record, if necessary.

2 Turn the screw (**2**) using a hex wrench and observe the behavior of the ribbon.

　　 To tighten the inner edge of the ribbon turn in the + direction. To tighten the outer edge of the ribbon, turn in the - direction.

Related topics

For information about...	See...
Printer components	"Printer overview" on page 16
Removing and installing the labels and ribbon in the printer	"Loading labels and ribbon" on page 50
Cleaning the printer components	"Cleaning the printer components" on page 155
Troubleshooting hardware problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Cleaning and replacing the vacuum pads

About this topic

The applicator head on the Microplate Labeler uses vacuum pads to pick up the printed labels from the printer and place the printed labels on the labware. This topic describes how to clean and, if necessary, replace the vacuum pads.

When to do this procedure

To maintain proper function, the vacuum pads must be clean and undamaged. A sticky residue from the label adhesive can build up on the vacuum pads. You should routinely clean the vacuum pads when you change the printer ribbon and labels.

If the Microplate Labeler is not picking up or placing the labels correctly and the air pressure setting is correct, try cleaning the vacuum pads.

If the vacuum pads are cracked, replace the vacuum pads.

Before you begin

> **CAUTION**   Do not use harsh abrasives, corrosive cleaning agents, or metal brushes to clean any Microplate Labeler component or accessory.

Make sure you have the following items:
- Cotton swabs
- Mild soap and water solution
- Replacement vacuum pads, if required

Cleaning the vacuum pads

Figure   Cleaning the vacuum pads on the applicator head
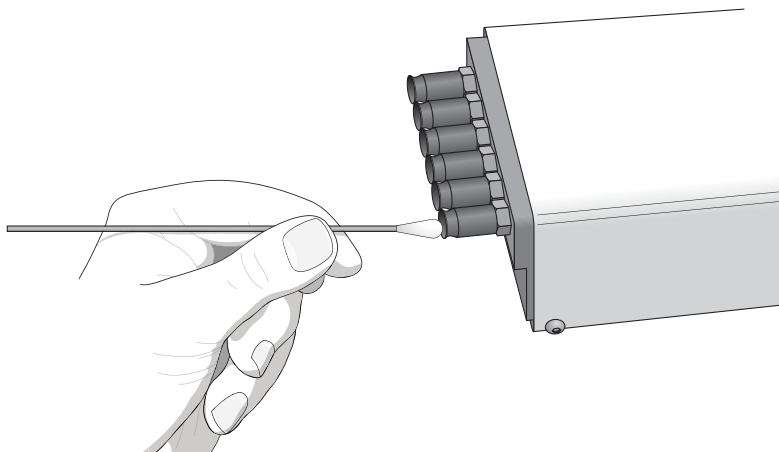
To clean the vacuum pads on the Microplate Labeler applicator head:

1 Open **Microplate Labeler Diagnostics**, click the **Profile** tab, and initialize the profile for the device.

2 To ensure the plate stage is out of the path of the applicator head:

   a In the **Stage Setup** tab, select the **Disable stage auto-repositioning** check box.

   b Gently rotate the plate stage manually so that it is out of the path of the applicator head.

3 To ensure that the applicator head is retracted and rotated away from the printer for easier access:

   a In the **I/O Functions** tab, click **Retract head**.

   b Click **Rotate to stage**.

4 Use soapy water and a cotton swab to wipe the surface of the vacuum pads that contacts the labels. Remove any dust and grease from each pad.

Note: The pads can develop a sticky residue from the label adhesive, which may require more effort to remove.

5 Wait for the vacuum pads to dry.

6 Run a print-and-apply test to verify that the vacuum pads are functioning properly. For details, see "Performing a print-and-apply test" on page 146.

If the vacuum pads are functioning properly, ensure that the applicator head is clear of the path of the plate stage. In the **Stage Setup** tab, clear the **Disable stage auto-repositioning** check box.

If problems persist, replace the vacuum pads using the following procedure or contact Automation Solutions Technical Support.

Inspecting and replacing the vacuum pads

Before removing the vacuum pads, try cleaning them, and then run a print-and-apply test to see if the problem persists.

Figure   Replacing the vacuum pads on the applicator head
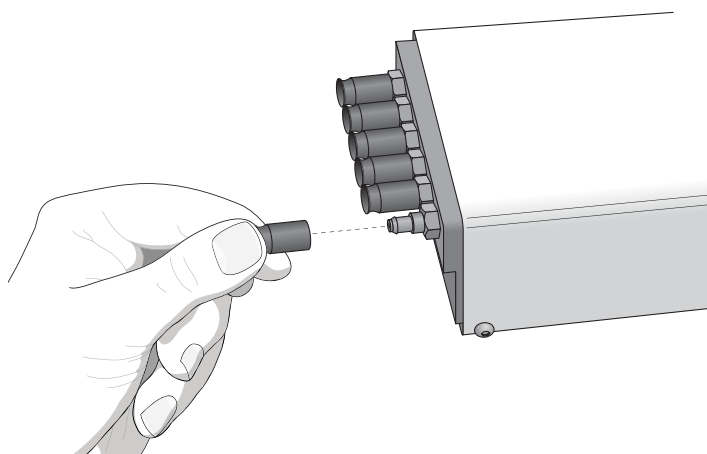
To inspect and replace the vacuum pads:

1 To gain access to the vacuum pads:

    a Ensure that the plate stage is rotated out of the path of the applicator head.

    b Rotate the applicator head towards the plate stage.

2 Grab the vacuum pad firmly with your fingers, and pull the pad off of the applicator head.

3 Roll the vacuum pad between your fingers and look for cracks or splits along the length of the pad.

    If a vacuum pad seems worn or has cracks or splits, replace all six vacuum pads.

4 Install new vacuum pads by pressing them onto the applicator head with your fingers.

Related topics

For information about…	See…
Shutting down the Microplate Labeler	"Starting up and shutting down" on page 60.
Hardware overview	"Hardware overview" on page 12
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Cleaning the Microplate Labeler exterior	"Cleaning the Microplate Labeler exterior" on page 153
Cleaning the printhead and the print roller	"Cleaning the printer components" on page 155
Troubleshooting hardware problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Disconnecting the air tubing

About this topic

This topic explains how to disconnect the air tubing without damaging the air input connector.

Before moving or shipping the Microplate Labeler you must disconnect the air tubing. You may also want to do this before performing maintenance or cleaning the device.

Before you begin

⚠️ **WARNING**   **To avoid injury, turn off the air supply before disconnecting the air tubing. When air is flowing, air tubing can injure you if it whips around and strikes you. If you have not been trained in the correct way to handle air tubing, contact your facilities department.**

CAUTION   Follow the directions in this topic to correctly disconnect the air tubing from the Microplate Labeler air supply port in order to avoid damage to the device.

Procedure

To disconnect the air tubing:

1 Turn off the air source so that there is no air pressure to the Microplate Labeler.

2 Push in the orange locking collar on the quick-release fitting.

Orange locking collar

00080
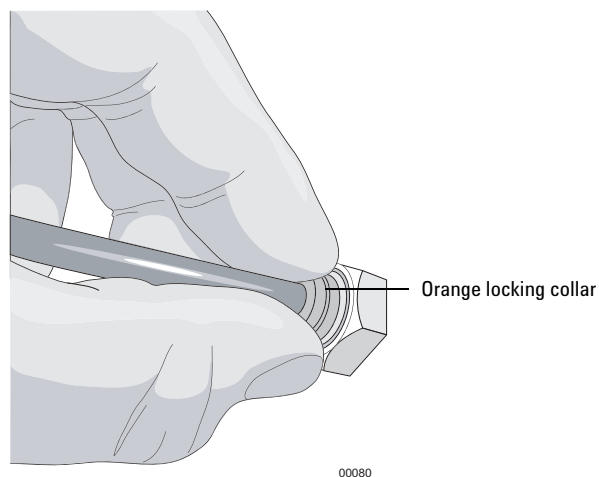
3 With your free hand, gently pull on the air tubing until it comes free.

Related topics

For information about...	See...
Connecting air supply	• "Connecting the air tubing: non-metric" on page 38 • "Connecting the air tubing: metric" on page 40
Troubleshooting hardware problems	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Replacing the fuse

About this topic

This topic describes how to replace the main fuse in the Microplate Labeler.

Before you begin

Use only the specified fuse type:

3 A, 0.25 x 1.25 in (6.35 x 31.75 mm), fast acting

You can order replacement fuses from Agilent Technologies.

> **CAUTION**   A blown fuse can indicate more serious problems. If the new fuse blows after replacement, contact Automation Solutions Technical Support.

> **CAUTION**   Using an incorrect fuse can damage the Microplate Labeler.

Procedure

To replace the fuse in the power switch:

1   Shut down the Microplate Labeler, and unplug the power cable from the rear panel connector.

2   At the rear panel power switch enclosure, use a small flat-head screwdriver (2.5 mm) to pry open the tab on the enclosure and open the enclosure cover.

Figure   Fuse enclosure location
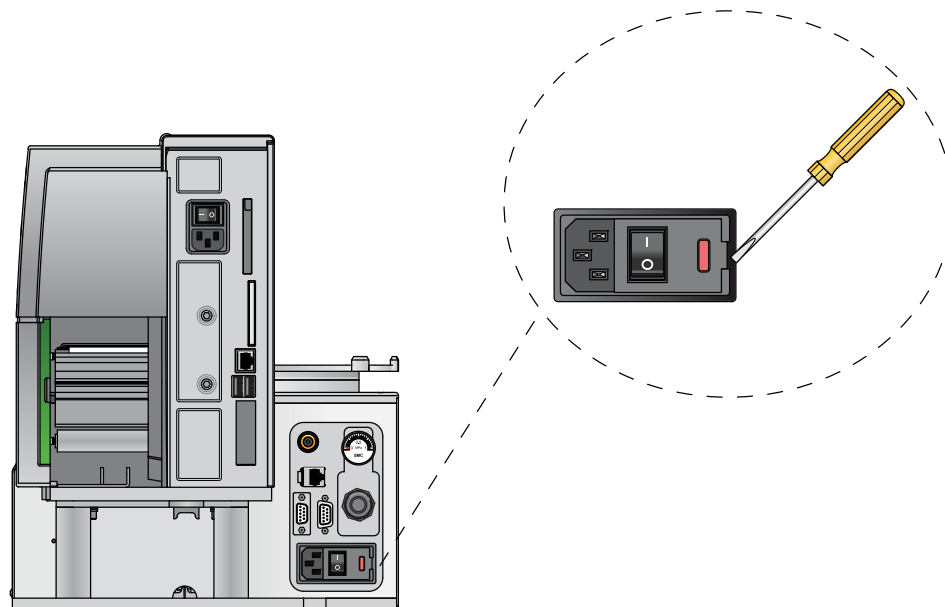
3   Slide the fuse cartridge all the way out of the enclosure.

Figure   Opened fuse enclosure
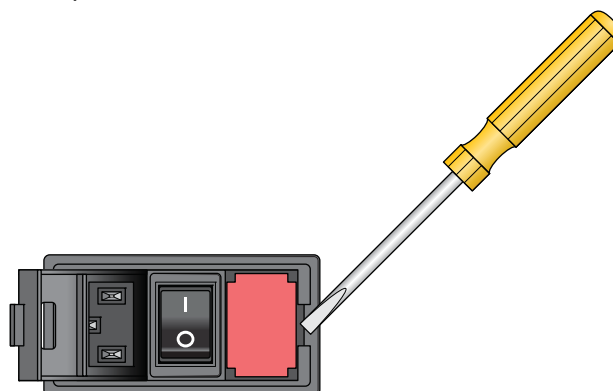
4   Replace the fuse in the cartridge.

5   Slide the fuse cartridge back into the power switch enclosure.

6   Press the enclosure cover securely into the closed position.

7   Plug in the power cable at the rear panel connector, and then start up the Microplate Labeler.

Related topics

For information about...	See...
Connecting the power cable	"Connecting the power cord" on page 43
Shutting down the Microplate Labeler	"Starting up and shutting down" on page 60
Reporting problems	"Reporting problems" on page 176

Troubleshooting hardware problems

About this topic

This topic describes some commonly-encountered hardware problems and provides suggestions for how to solve them.

If you encounter a problem, review the following tables first to see if you can solve the problem:

- "Communications or power problems" on page 167
- "Air pressure and label pick-and-place problems" on page 169
- "Printing problems" on page 169

If an error message appears, see "Resolving error messages" on page 171.

If your problem is not listed, or you are not able to resolve the problem, contact Automation Solutions Technical Support. See "Reporting problems" on page 176.

Communications or power problems

Problem	Possible cause	Possible solution
The Microplate Labeler does not turn on.	The power cord is not connected or is defective.	Ensure that the power cord is connected to the Microplate Labeler connection panel at the rear of the applicator. See "Connecting the power cord" on page 43.
		Make sure the power cord is in good condition.
	The fuse is bad.	See "Replacing the fuse" on page 164.
		IMPORTANT A blown fuse can indicate other problems. If the fuse blows again, contact Automation Solutions Technical Support.
The profile failed to initialize the device.	The communications cable is not properly connected, or the wrong cable is being used.	Verify that the correct cable is properly connected. *Note:* Ethernet is the recommended mode of communication. See "Connecting the Microplate Labeler to the computer" on page 45.
	The printer is not in a Ready state.	The Ready message must appear on the printer's display before the Microplate Labeler can initialize. If the Ready message does not appear:
		1 Open the printer cover, and verify that the printhead lever is down.
		2 Turn off the power to the Microplate Labeler, wait a full 5 seconds, and then turn on the power.

Problem	Possible cause	Possible solution
Communication is not established with an Ethernet connection.	The communications cable is not properly connected, or the wrong cable is being used.	Verify the computer was connected correctly to the Ethernet port on the Microplate Labeler connection panel (at the back of the applicator). See "Connecting the Microplate Labeler to the computer" on page 45.
	The IP address setting is incorrect.	If you are connecting multiple Microplate Labeler devices on the same network, contact Automation Solutions Technical Support for guidance on setting the IP addresses.
		For details on how to connect to the device via Ethernet, see "Connecting the Microplate Labeler to the computer" on page 45.
Communication is not established with a serial connection.	The communications cable is not properly connected, or the wrong cable is being used.	Verify that the computer was connected correctly to the serial port on the Microplate Labeler connection panel (at the back of the applicator). See "Connecting the Microplate Labeler to the computer" on page 45.
	Wrong COM port selected	Verify that the selected profile specifies the correct COM port on the computer.
		To verify the COM port in the profile:
		1 In Microplate Labeler Diagnostics, click the Profiles tab.
		2 Select the profile, and verify the selected COM port is correct for your connection.
		For details on creating or editing profiles, see "Creating and managing profiles" on page 77.
The printer screen is blank.	The printer was not initialized properly or the power was cycled too quickly.	At the Microplate Labeler connection panel (on the back of the applicator), press the power switch to the off (o) position, wait a full 5 seconds, and then press the power switch to the on (|) position.
	The printer power switch is in the off (o) position.	Ensure that the power switch on the back of the printer remains in the on (|) position at all times.
In Microplate Labeler Diagnostics, the Trigger BCR button and Verify barcodes buttons are unavailable.	The barcode reader was not detected during initialization, or the Microplate Labeler was not initialized.	Make sure the barcode reader is installed properly. For details, contact Automation Solutions Technical Support.

Air pressure and label pick-and-place problems

Problem	Possible cause	Possible solution
The applicator head does not retract, extend, or rotate on command and you can hear a hissing sound.	An air leak is present.	Inspect the air tubing and check the air connection on the Microplate Labeler connection panel and at the source for leaks. For connection details, see "Connecting the air tubing: non-metric" on page 38 or "Connecting the air tubing: metric" on page 40.
The applicator head does not extend far enough to reach the labels at the printer, or is retracting too soon.	The air pressure is set incorrectly.	Check the air pressure and adjust the pressure as necessary. See "Checking the basic applicator functions" on page 144.
	The pneumatics flow control requires adjustment.	Contact Automation Solutions Technical Support.
Labels are not being picked up from the printer.	The air pressure is set incorrectly.	Check the air pressure and adjust the pressure as necessary. See "Checking the basic applicator functions" on page 144.
	The vacuum pads are dirty or worn.	See "Cleaning and replacing the vacuum pads" on page 160.
	The applicator head height or internal pressure settings require adjustment.	Contact Automation Solutions Technical Support.
A label is "flipped over" when the applicator head is picking it up from the printer.	The vacuum pads are dirty or worn.	Remove the label and clean the vacuum pads. See "Cleaning and replacing the vacuum pads" on page 160. If the problem persists, contact Automation Solutions Technical Support.

Printing problems

Problem	Possible cause	Possible solution
The printed image is not clear.	The wrong type of media is installed, or the media is installed incorrectly.	Make sure that you are using the ribbon and labels provided in the G5404B Microplate Labeler Media Kit. See "Loading labels and ribbon" on page 50.
	The transfer ribbon is wrinkled.	See "Adjusting the feed path of the ribbon" on page 159.

Problem	Possible cause	Possible solution
The print image has smears or blanks, or one side is lighter than the other.	The printhead is dirty.	See "Cleaning the printer components" on page 155.
The labels feed through the printer, but the ribbon does not move.	The ribbon is installed incorrectly.	Make sure that you are using the ribbon and labels provided in the G5404B Microplate Labeler Media Kit, and that the media is installed correctly. See "Loading labels and ribbon" on page 50.
The labels are drifting at the peelbar.	Excess media backing up on the take-up reel.	Discard the excess labels and ribbon and re-install labels and ribbon. See "Loading labels and ribbon" on page 50.

Related topics

For information about...	See...
Shutting down the Microplate Labeler	"Starting up and shutting down" on page 60.
Hardware overview	"Hardware overview" on page 12
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Preventive maintenance schedule	"Routine maintenance" on page 142
Resolving error messages	"Resolving error messages" on page 171
Reporting problems	"Reporting problems" on page 176

Resolving error messages

About this topic

This topic describes commonly-encountered error messages for the Microplate Labeler and how to resolve them.

If you encounter a problem, review the following tables first to see if you can solve the problem:

- *"Air pressure messages" on page 171*
- *"Applicator head error messages" on page 172*
- *"Communication messages" on page 172*
- *"Printer error messages" on page 173*

If you have a hardware problem, see *"Troubleshooting hardware problems" on page 167*.

If your problem is not listed, or you are not able to resolve the problem, contact Automation Solutions Technical Support. See *"Reporting problems" on page 176*.

Air pressure messages

Error message	Possible cause	Solution
Air pressure is out of range.	The air pressure is too high or too low.	In Microplate Labeler Diagnostics, check the air pressure reading on the I/O Functions tab. See *"Checking the basic applicator functions" on page 144*.
An unknown error occurred when reading the air pressure before stage motion.	The air pressure is too high or too low.	In Microplate Labeler Diagnostics, check the air pressure reading on the I/O Functions tab. See *"Checking the basic applicator functions" on page 144*.

Applicator head error messages

Error message	Possible cause	Solution
An error occurred when picking the label.	Dirty vacuum pads or worn vacuum pads.	Clean and inspect the vacuum pads. Replace worn vacuum pads. See "Cleaning and replacing the vacuum pads" on page 160.
	The wrong type of media is installed, or the media is installed incorrectly.	Make sure that you are using the ribbon and labels provided in the G5404B Microplate Labeler Media Kit. See "Loading labels and ribbon" on page 50 for installation instructions.
An error occurred when extending the head.	The air pressure is too high or too low.	In Microplate Labeler Diagnostics, check the air pressure reading on the I/O Functions tab. See "Checking the basic applicator functions" on page 144.
An error occurred when applying the label.	The plate stage does not contain a microplate.	Ensure that a microplate is on the plate stage and try again.

Communication messages

Error message	Possible cause	Solution
A serial error occurred.	The communications cable is not connected properly, or the wrong cable is being used.	Verify that the computer was connected correctly to the serial port on the Microplate Labeler connection panel (at the back of the applicator). See "Connecting the Microplate Labeler to the computer" on page 45.
	The wrong COM port on the computer is specified in the profile.	Verify that the selected profile specifies the correct COM port on the computer. ***To verify the COM port in the profile:*** **1** In Microplate Labeler Diagnostics, click the Profiles tab. **2** Select the profile, and verify the selected COM port is correct for your connection. See "Creating and managing profiles" on page 77.

Error message	Possible cause	Solution
An unknown error has occurred.	An unknown error has occurred.	At the Microplate Labeler connection panel (on the back of the applicator), press the power switch to the off (o) position, wait a full 5 seconds, and then press the power switch to the on (|) position.

Printer error messages

Error message	Possible cause	Solution
An error occurred when adjusting the printer format.	The label format contains errors.	Open Microplate Labeler Diagnostics and check label format. See "Creating and editing label formats" on page 94.
An error occurred when form feeding the printer.	The wrong type of media is installed, or the media is installed incorrectly.	Make sure that you are using the ribbon and labels provided in the G5404B Microplate Labeler Media Kit. See "Loading labels and ribbon" on page 50 for installation instructions.
Either the printer command was malformed or the barcode size settings are too large.	The label format contains errors.	See "Creating and editing label formats" on page 94.
Empty input, please try again.	The label format name is missing.	Enter the label format name.
The printer is not ready.	The printer was not initialized properly or the power was cycled too quickly.	At the Microplate Labeler connection panel (on the back of the applicator), press the power switch to the off (o) position, wait a full 5 seconds, and then press the power switch to the on (|) position.
	The display on the front of the printer indicates a state other than Ready.	Use the navigator pad controls on the front of the printer to return to the Ready state. See "Using the printer display and navigation pad" on page 174.
	The printer power switch is in the off (o) position.	Ensure that the power switch on the back of the printer remains in the on (|) position at all times.

Related topics

For information about...	See...
Routine maintenance	"Routine maintenance" on page 142
Troubleshooting the hardware	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Using the printer display and navigation pad

About this topic

This topic describes how to view the status information for the Microplate Labeler printer and how to return the printer to the Ready state.

Automation Solutions Technical Support might request the device status information from you when troubleshooting the Microplate Labeler.

About the navigator pad and service display

The printer has a status menu that you can access using the printer service display (**1**) and the navigator pad (**2**) on the front of the printer.

Figure   Printer service display and navigator pad
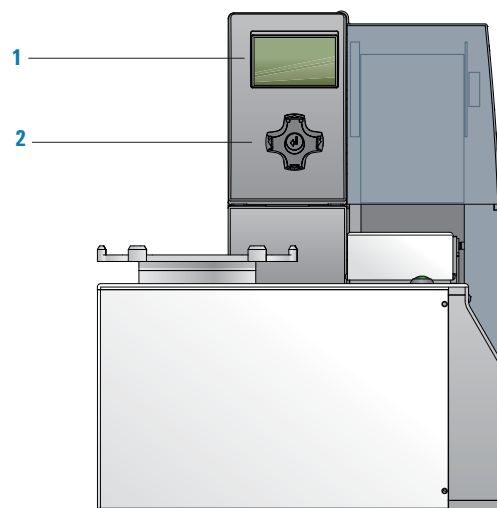
The navigator pad has the following buttons:

- menu (left arrow)
- feed (right arrow)
- pause (up arrow)
- cancel (down arrow)
- ⏎ (center)

Procedures

To view the status menu:

1 On the navigator pad (**2**), press the **menu** button.

2 Press the right arrow (feed) button to move to the **Short status** icon in the display, and then press the ⏎ button to select the **Short status** menu.

3 Click the up and down arrow (pause and cancel) buttons to scroll through the individual lines.

To return the printer display to the Ready state:

1 To exit the status menu press the ⏎ button.

2 Scroll to the left by pressing the **menu** button repeatedly until **Ready** appears on the printer display (**1**).

IMPORTANT The printer display must show the Ready message before you can initialize the device. During operation, the software displays operator messages and error messages on the computer screen.

Related topics

For information about...	See...
Routine maintenance	"Routine maintenance" on page 142
Troubleshooting the hardware	"Troubleshooting hardware problems" on page 167
Reporting problems	"Reporting problems" on page 176

Reporting problems

Contacting Automation Solutions Technical Support

Note: If you find a problem with the Microplate Labeler, contact Automation Solutions Technical Support. For contact information, see Notices on the back of the title page.

Note: You can also send a software bug report from within the VWorks software.

Reporting hardware problems

When contacting Agilent Technologies, make sure you have the serial number of the device ready.

Reporting software problems

When you contact Automation Solutions Technical Support, make sure you provide the following:

- Short description of the problem
- Software version number
- Error message text (or screen capture of the error message dialog box)
- Screen capture of the About VWorks software dialog box
- Relevant software files

To find the VWorks software version number:

In the VWorks software, select **Help > About VWorks.**

To find the Diagnostics software version number:

1 Open **Diagnostics.**

2 Read the version number on the title bar of the diagnostics window.

To send compressed protocol and associated files in VZP format:

In the VWorks software, select **File > Export** to export and compress the following files:

- Protocol file
- Device file (includes the device profile and teachpoint file)
- Labware definitions
- Liquid classes
- Pipette techniques
- Hit-picking files
- Plate map files
- Barcode files
- Error library
- Log files
- Form file (*.VWForm)

Reporting user guide problems

If you find a problem with this user guide or have suggestions for improvement, send your comments using one of the following methods:

- Click the feedback button () in the online help.

- Send an email to documentation.automation@agilent.com.

Related topics

For information about...	See...
Routine maintenance and troubleshooting	"Routine maintenance" on page 142
Hardware problems	"Troubleshooting hardware problems" on page 167
Software problems	"Resolving error messages" on page 171

A

Quick reference to Diagnostics software

This appendix provides a quick reference to the Microplate Labeler Diagnostics software. The topics are:

Agilent Technologies

Testing tab

About this topic

This topic provides a quick reference to the controls and indicators in the Microplate Labeler Diagnostics—Testing tab. You can use the controls and indicators in the Testing tab to perform print or print-and-apply tests.

Figure   Testing tab
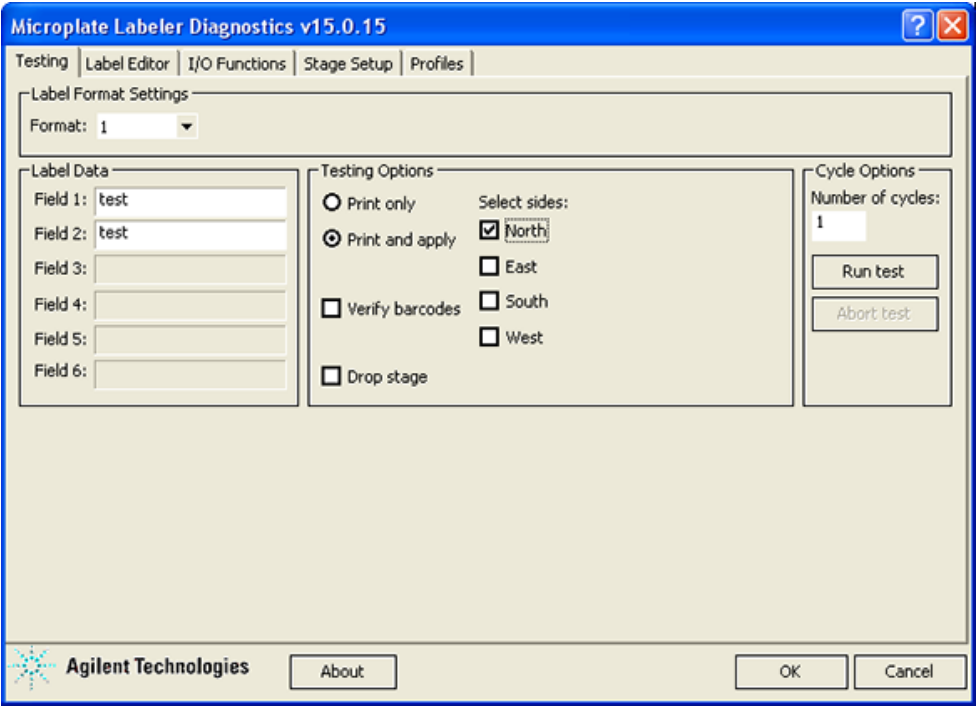
Testing tab procedures

The Testing tab enables you to:
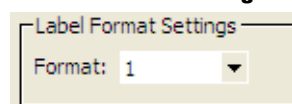
Procedure	See...
Print or print and apply one or more test labels	"Performing a print-and-apply test" on page 146

Testing tab contents

The Testing tab contains the following:
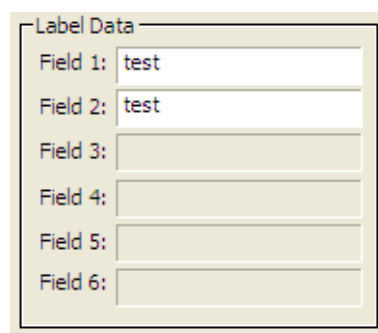
- Label Format Settings area
- Label Data area
- Testing Options area
- Cycle Options area

Label Format Settings area
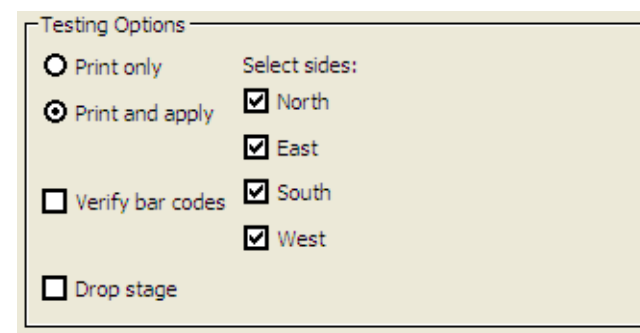
Controls and indicators	Description
Format	Allows you to select a label format that is currently loaded in the printer to use for a print or print-and-apply test.

Label Data area

Controls and indicators	Description
Field 1 to Field 6	Allows you to type text in the designated fields for the test label. Fields that are defined in the label format as barcode fields will be encoded into the specified barcode symbology before printing.
	The field data entered into Microplate Labeler Diagnostics is temporarily stored in the computer and not the printer, so it can only be used for testing purposes.
	Note: Only the fields defined in the currently selected format are available.
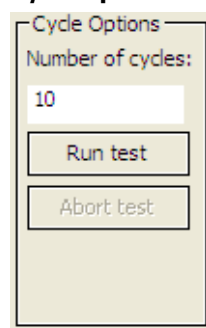
Testing Options area

Controls and indicators	Description
Print only	Specifies a print operation, where one or more test labels are printed without applying them to microplates.
Print and apply	Specifies a print-and-apply operation, where one or more test labels are printed and applied to microplates.
Verify barcodes	*Available for optional barcode reader only.* Enables the barcode reader during a print-and-apply test. Use this feature to verify that the barcodes can be read by the barcode reader after the labels are printed and applied to a microplate.
Drop stage	Moves the plate stage to the lower stage position.
Select sides	Specifies the sides of the microplate to which to apply test labels.
	When the microplate is on the plate stage, the sides of the microplate are referred to as north, south, east, and west as the figure shows.

Cycle Options area

Controls and indicators	Description
Number of cycles	Specifies the number of test cycles to run using the specified label data and testing options. For example, if you select format 1, and specify the Print and apply option, the North side, and 10 cycles, the device would print and apply labels onto the North side of 10 microplates.
Run test	Starts the test cycles.
Abort test	Stops the test cycles.

Related information

For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Other tabs in Microplate Labeler Diagnostics	"Quick reference to Diagnostics software" on page 179
Using the little green button to print a label	"PlateTag—starting a print job" on page 137
Label formats and fields	"About label formats and content" on page 92

Label Editor tab

About this topic

This topic provides a quick reference to the controls and indicators in the Microplate Labeler Diagnostics—Label Editor tab. You use the controls and indicators in the Label Editor tab to design label formats and save them.

The Microplate Labeler includes templates for the label formats that are ready to use or customize. For an overview of the templates, see "Label format templates" on page 190.

Figure Label Editor tab
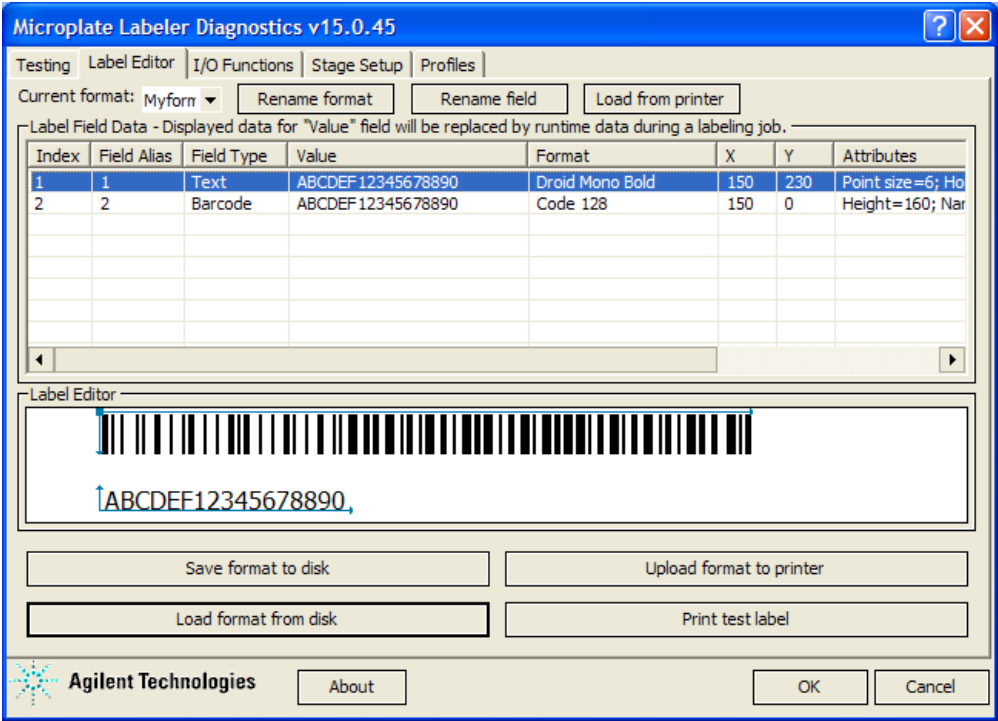
Label Editor tab procedures

The Label Editor tab enables you to:

Procedure	See...
Create or edit label formats	"Creating and editing label formats" on page 94
Print a test label of a format that has been uploaded to the printer	"Printing a test label from the Label Editor tab" on page 102
Upload label formats to the printer	"Uploading and saving a format" on page 101
Save label formats to XML files	"Uploading and saving a format" on page 101

Label Editor contents

The Label Editor tab contains the following:

- Format selection list and format buttons
- Label Field Data table
- Label Editor preview box

Format selection list and format buttons

Controls and indicators	Description
Current format	Specifies the format that you are loading into memory for editing, or that you are saving to disk or uploading to the printer.
	Label format templates are included with the Microplate Labeler. You can load the formats from the printer or from the computer.
	Only label formats that have been uploaded to the printer can be printed or printed and applied.
Rename format	Opens a dialog box where you can enter a new name for the label format.
Rename field	Opens a dialog box where you can enter an alias for the selected field (Index 1 to Index 6).
Load from printer	Temporarily loads a label format selected in the Current format list from the printer into the Label Editor tab for editing or saving to disk.
Save format to disk	Opens the Save As dialog box where you can save the displayed label format to an XML file. Each label format is saved as a separate XML file.
	By default, the label formats are in the following folder:
	C:\VWorks Workspace\Microplate Labeler Label Formats
	Label formats can be accidently overwritten in the printer, so you should save backup copies of the label formats in XML files.
Load format from disk	Displays the Open dialog box, where you can select a label format that was saved as an XML file, and load the label format into the Label Editor tab temporarily for editing or uploading to the printer.
	By default, label format templates are installed in the following folder:
	C:\VWorks Workspace\Microplate Labeler Label Formats
	Note: Only the label formats created for the cab A2+ printer are supported on the G5404B Microplate Labeler.

Controls and indicators	Description
Upload format to printer	Uploads the displayed label format to the printer.
	Only the label formats stored in the printer are available for labeling protocols (VWorks or BenchWorks software, batch printing jobs (PlateTag software), or for print or print-and-apply tests (Microplate Labeler Diagnostics).
Print test label	Performs a test print of a format stored in the printer that you have selected in the Current format list.
	Only the label formats stored in the printer are available for printing.

Label Field Data table

The Label Field Data table displays the data for the label format that is currently loaded in the Label Editor tab.

Each row in the table represents a field in the currently selected label format. The Label Field Data table columns include the following:

Column	Description
Index	Indicates the number of the field. Each field defined in the label format is given an index number from 1 through 6.
	Only field 2 can be a barcode field. All other fields can be human-readable text.
Field Alias	Specifies a name for the field. The default alias is the index number.
	To change the alias to something more descriptive, select the field row in the table, click the Rename field button, and then type the new name in the dialog box that appears.

Column	Description
Field Type	Specifies whether the field is human-readable text or barcode. • Field 1 must be human-readable text. • Field 2 can be a barcode or human-readable text. • Fields 3–6 can be human-readable text. **IMPORTANT** To ensure that the barcode reader can read a barcode, the label should include a blank margin (quiet zone) on each end of the barcode field. In general, the quiet zone should be 10 times the dimension of the narrowest bar in the barcode or 0.25 inch (0.635 cm), whichever is greater.
Value	*Test purposes only.* Specifies the contents of the field for a test print using the Print test label button in the Label Editor tab. Click the Value box for the given field, click the box again, and then type the new value: • *Text/numeric field.* The value is the actual text that will be printed during a test print. • *Barcode field.* The value is the actual data that is encoded into the barcode for a test print. The barcode text should follow the rules of the specified symbology, for example, limited to numbers only or uppercase letters and numbers. These values are not used for production print jobs. When you run a labeling protocol or a print job, the value of each field comes from the data that you select in the VWorks, BenchWorks, or PlateTag software. If you do print tests from the Testing tab, the values from the Label Editor tab are not used.
Format	Specifies the printing format to be used when printing the field. Assigns the text font or barcode symbology, depending on whether the field is a text field or a barcode field. Ensure that the characters you enter for a barcode field are supported by the selected format (symbology). For an overview of the supported barcode symbologies, see "Barcodes and supported symbologies" on page 109.

Column	Description
X, Y	Specifies the printer coordinates on the label for the position of each field, where • *Text field.* The X,Y values specify the bottom, left corner of the field. • *Barcode field.* The X,Y values specify the top, left corner of the field. The Label Editor preview box displays the x, y coordinates as the intersection of a pair of thin blue lines, either at the top left of a barcode field, or the bottom left of a text field. To change the field position, you can type new values in the X and Y columns. The coordinates are measured in 0.001-in (0.0254-mm) increments. Given a label size of 0.25 by 2.0 in (0.0635 by 5.08 cm), the range of possible values is as follows: Y: 0 to 250 X: 0 to 2000 *Note:* Alternatively, you can drag the field to a new position in the Label Editor preview box. However, this is not as precise a method for positioning the field. When the format is uploaded to the printer, the software transfers the x, y coordinates to the printer label coordinates.
Attributes	Indicates the field size and other attributes. For details on changing the attributes, see "Changing the field size and other attributes" on page 102.

Label Editor preview box

The Label Editor preview box allows you to add and delete fields, drag fields to reposition them on the label, and view an approximation of how the printed label will appear. The preview is not precise, and you must test print the label to see the actual field positions, and then adjust as necessary. To specify the exact coordinates, you can type the values for the coordinates in the Label Field Data table X and Y columns.

Figure   Label format example in the preview box and the resulting printed label

Label Editor preview box

Printed label

If you load an undefined format, the Label Editor preview box is empty. To add new fields to format, right-click the preview box to display a shortcut menu.
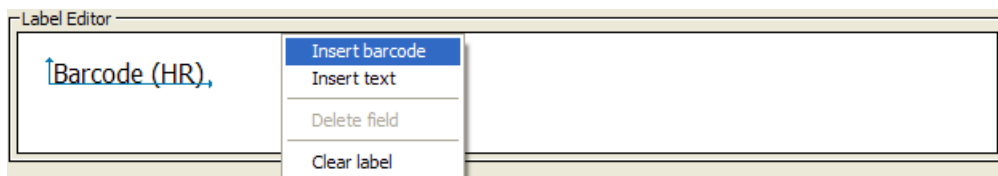
The shortcut menu contains the following commands:

Command	Description
Insert barcode	*Available for field 2 only.* Inserts a barcode field in the Label Editor preview box and adds a barcode field to the Label Field Data table.
	A pair of thin blue lines with arrows appear on the top and left sides of the barcode field in the preview box. The intersection of the blue lines represents the printer x, y coordinates for the field position on the label.
	Only one barcode field is allowed per label format.
Insert text	Inserts a text (human readable) field in the Label Editor preview box and adds a text field to the Label Field Data table.
	A pair of thin blue lines with arrows appear on the bottom and left sides of the text field in the preview box. The intersection of the blue lines represents the printer x, y coordinates for the field position on the label.
Delete field	Deletes the field that is highlighted in the Label Field Data table.

Command	Description
Clear label	Clears all fields from the Label Editor preview box and the Label Field Data area.

Label format templates

Templates are loaded in the printer and installed in the following folder as XML files:

`C:\VWorks Workspace\Microplate Labeler Label Formats`

Label format	Description
1	 *File name*: `Template 1 - Code 128 over single small text - 20090923.xml` *Fields:* 1 human-readable text, 1 barcode *Comments:* Recommended for most microplate applications because the format provides an optimized blend of data density, machine readability, and human readability.
2	 *File name*: `Template 2 - Code 128 barcode only - 20090923.xml` *Fields*: 1 barcode *Comments:* Provides the best machine readability. You can pair this label with a second label to add human-readable text, for example, template 3 or 5.
3	 *File name:* `Template 3 - Single large text only - 20090923.xml` *Fields:* 1 human-readable text *Comments:* Provides the best legibility of human-readable text. You can pair this label with a barcode-only label, for example, template 2.

Label format	Description

4

File name: `Template 4 - Big text left with Code 128 right - 20090923.xml`

Fields: 1 human-readable text, 1 barcode

Comments: Provides the best machine readability and human readability in a single label. This template is useful for smaller amounts of data consisting of a maximum of 10 numerals or 6 alpha characters.

5

File name: `Template 5 - Four small text fields - 20090923.xml`

Fields: 4 human-readable text

Comments: Can be used as a second label to add more human-readable information to a microplate that already has a barcode.

6

File name: `Template 6 - Data Matrix with single large text - 20090923.xml`

Fields: 1 human-readable text, 1 barcode

Comments: Provides a 2D (Data Matrix) version of template 1. The 2D symbology allows space for a much larger text field than that in template 1.

7

File name: `Template 7 - Data Matrix with two small text - 20090923.xml`

Fields: 2 human-readable text, 1 barcode

Comments: Provides the data density of 2D (Data Matrix) symbology to encode a large amount of data.

8

File name: `Template 8 - PDF 417 over single medium text - 20090923.xml`

Fields: 1 human-readable text, 1 barcode

Comments: Provides 2D (PDF 417) symbology in a format similar to templates 1 and 6 but with slightly more data capacity.

Label format	Description
9	 *File name:* Template 9 - PDF417 over single small text - 20090923.xml *Fields:* 1 human-readable text, 1 barcode *Comments:* Provides the data density and shape of 2D (PDF 417) symbology to encode the largest amount of data on a label size of 0.0635 by 5.08 cm (0.25 by 2.0 in).

Related information

For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Other tabs in Microplate Labeler Diagnostics	"Quick reference to Diagnostics software" on page 179
Label formats and content	"About label formats and content" on page 92
Creating and editing label formats	"Creating and editing label formats" on page 94
Printing test labels	"Performing a print-and-apply test" on page 146

I/O Functions tab

About this topic

This topic provides a quick reference to the controls and indicators in the Microplate Labeler Diagnostics—I/O Functions tab. The controls and indicators in the I/O Functions tab are used primarily for verifying the correct functioning of the applicator and for troubleshooting problems.

Figure   I/O Functions tab
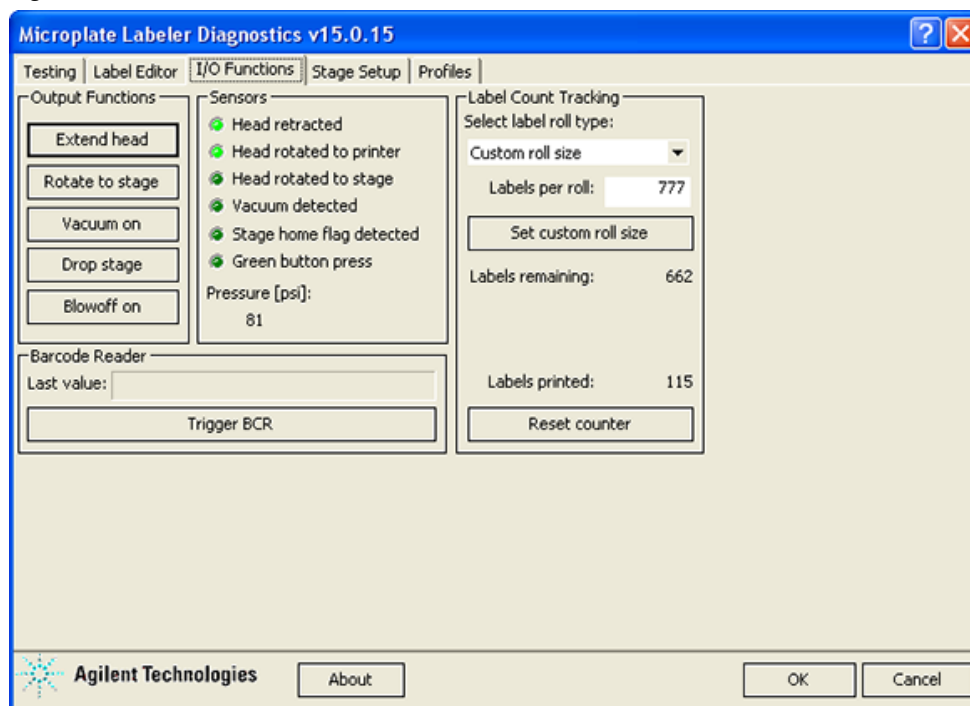
I/O Functions tab procedures

The I/O Functions tab enables you to:

Procedure	See...
Extend or retract the applicator head	"Checking the basic applicator functions" on page 144
Rotate the applicator head to the plate stage and back to the printer	"Checking the basic applicator functions" on page 144
Turn the vacuum on and off	"Checking the basic applicator functions" on page 144
Move the plate stage from the top position to the bottom position and back	"Checking the basic applicator functions" on page 144
Turn on and off the blowoff air	"Checking the basic applicator functions" on page 144
Check the regulated air pressure	"Checking the basic applicator functions" on page 144
Reset the labels printed counter to track the labels used per roll	"Resetting the label counter in the Diagnostics software" on page 157
Trigger the barcode reader	"Testing the barcode reader using Diagnostics" on page 152

I/O Functions tab contents

The I/O Functions tab contains the following:

- Output Functions area
- Sensors area
- Label Count Tracking area
- Barcode Reader area

Output Functions area
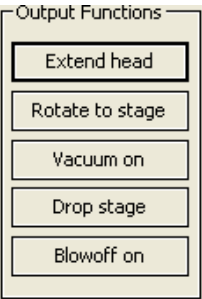
Controls and indicators	Description
Extend head/ Retract head	Extends or retracts the applicator head.
Rotate to stage/ Rotate to printer	Rotates the applicator head to the plate stage or to the printer.
Vacuum on/ Vacuum off	Turns on or off the vacuum to the vacuum pads on the applicator head.
Drop stage/Raise stage	Moves the plate stage to the upper or lower stop position.
Blowoff on/Blowoff off	Turns on or off the blowoff air to the applicator head.

Sensors area
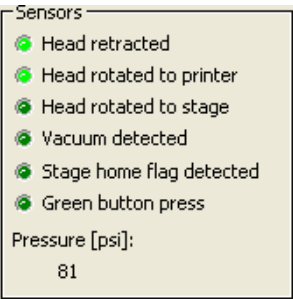
If a sensor indicator fails to light, the sensor might be faulty or require an adjustment. Contact Automation Solutions Technical Support for assistance.

Controls and indicators	Description
Head retracted	Lights when the applicator head is in the retracted position (away from the printer).
Head rotated to the printer	Lights when the applicator head is rotated to the printer.
Head rotated to stage	Lights when the applicator head is rotated toward the plate stage.
Vacuum detected	Lights when the vacuum is turned on and the vacuum pads on the applicator head are holding a label.
Stage home flag detected	Lights when the plate stage rotation sensor detects the home flag. The light should be lit when the plate stage moves counterclockwise from the home position and extinguished when the plate stage moves clockwise from the home position. *Note:* If the plate stage rotates a full revolution and the light does not change state, the sensor might be faulty.
Green button press	Lights when the green button on the top of the device is pressed and held. *Note:* If a print job is selected in the PlateTag software, pressing the green button starts the print job.
Pressure (psi)	Indicates the current air pressure inside the Microplate Labeler after the pressure has been regulated by the internal pressure regulator. The readout should be 80 psi (0.55 MPa), minimum. • *If the readout is <80 psi.* Verify that the air source is supplying 80 psi (0.55 MPa), minimum. If the source is above 80 psi and the readout is below 80 psi, use the pressure regulator knob on the back of the applicator to increase the pressure. • *If the readout is >87 psi.* Use the pressure regulator knob on the back of the applicator to lower the pressure to 85 psi (0.58 MPa), maximum. For instructions on setting the air pressure, see "Setting the air pressure" on page 42.

Label Count Tracking area

The Label Count Tracking settings are saved to the printer.

Controls and indicators	Description
Select label roll type	Specifies the number of labels on the label roll.
Labels per roll	Available only if you select Custom roll size from the Select label roll type list. Allows you to set a roll size other than the standard sizes available in the list.
Set custom roll size	Available only if the Custom roll size option is selected. Applies the value entered in the Labels per roll box.
Labels remaining and Labels printed	Specifies labels remaining and the labels printed since the counter was reset. The labels remaining and labels printed typically equal the labels per roll.
Reset counter	Resets the label counter so that the Labels printed field indicates 0. Click Reset counter when you load a new roll of labels.

Barcode Reader area

Controls and indicators	Description
Last value	Indicates the value read by the barcode reader.
Trigger BCR	*Available only if barcode reader is installed and initialized.* Causes the barcode reader to scan the label of the microplate on the plate stage, and then displays the reading in the Last value box.

Related information

| For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Other tabs in Microplate Labeler Diagnostics	"Quick reference to Diagnostics software" on page 179
Plate stage positions	"About plate stage and applicator head positions" on page 81

Stage Setup tab

About this topic

This topic provides a quick reference to the controls and indicators in the Microplate Labeler Diagnostics—Stage Setup tab. The controls in the Stage Setup tab enable you to rotate the plate stage and to reset the plate stage angles (teachpoints) when setting up the device.

Figure   Stage Setup tab
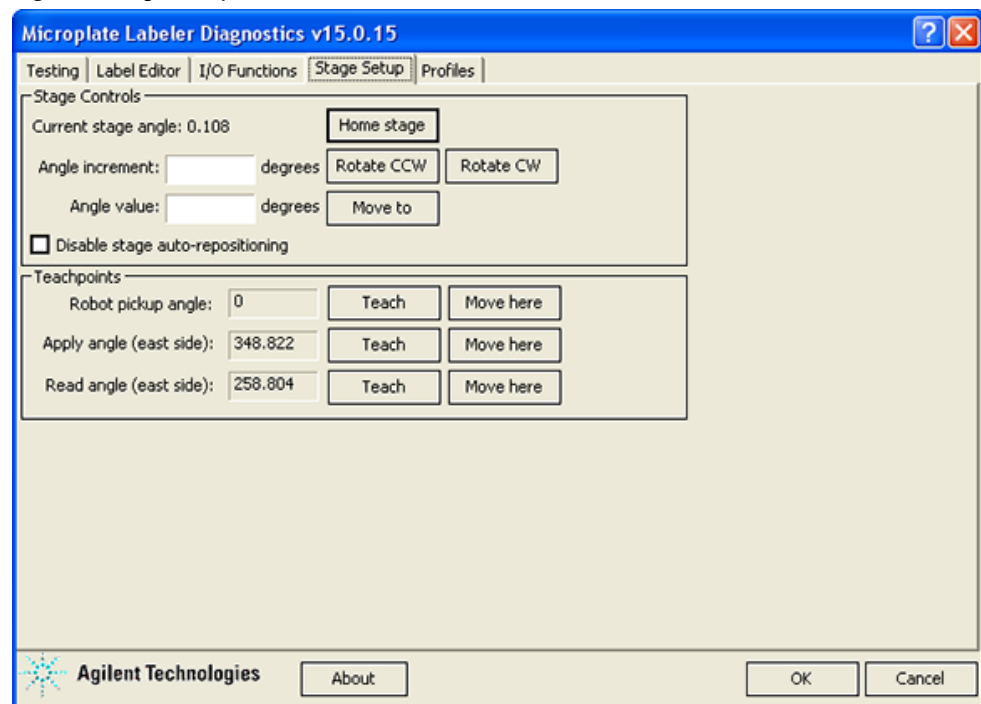
Stage Setup tab procedures

The Stage Setup tab enables you to:

Procedure	See...
Home the plate stage	"Using plate stage controls in Diagnostics" on page 149
Rotate plate stage	"Using plate stage controls in Diagnostics" on page 149
Enable or disable plate stage auto-repositioning	"Using plate stage controls in Diagnostics" on page 149
Set teachpoints	• "Using plate stage controls in Diagnostics" on page 149 • "Setting the robot pickup angle teachpoint" on page 88

CAUTION The plate stage teachpoints are associated with a specific device profile and stored in the Windows registry. If you delete a profile, the teachpoints are also deleted.

Stage Setup tab contents

The Stage Setup tab contains the following:
• Stage Controls area
• Teachpoints area

Stage Controls area

Controls and indicators	Description
Current stage angle	Displays the current angle of the plate stage. As you face the front of the device, 0 degrees is the left side of the plate stage. Rotating the plate stage clockwise increases the angle.
Home stage	Initiates the homing sequence that searches for the plate stage home position and sets that position as 0 degrees.

Controls and indicators	Description
Angle increment (degrees)	Specifies a relative value to use when rotating the plate stage using the Rotate CCW and Rotate CW buttons. Each time the Rotate CCW or Rotate CW button is pressed, the plate stage moves by the specified increment in the designated direction.
Rotate CCW	Rotates the plate stage counterclockwise by the amount specified in the Angle increment box.
Rotate CW	Rotates the plate stage clockwise by the amount specified in the Angle increment box.
Angle value (degrees)	Specifies an absolute value to which the plate stage will move when the Move to button is pressed.
Move to	Moves the plate stage to the absolute position specified in the Angle value box.
Disable stage auto-repositioning	Enables or disables auto-repositioning for the plate stage. Default is not selected (auto-repositioning is enabled). *When enabled.* If the plate stage is moved from a position by an outside force (for example, if someone rotates the stage by hand), the auto-repositioning feature automatically moves the plate stage back to the last angle. *When disabled.* If the plate stage is rotated manually it remains at the new position. This can be useful when setting up, troubleshooting, or performing maintenance on the Microplate Labeler.

Teachpoints area

Controls and indicators	Description
Robot pickup angle	Specifies the position that the plate stage returns to when a print-and-apply cycle is completed. Default setting: 0 For devices that are integrated in a lab automation system or workstation, this is the position where an external robot picks up or places a microplate on the plate stage. To set the value, use the controls in the Stage Controls area to move the plate stage to the desired position. Click Teach to set the position.

Controls and indicators	Description
Apply angle (east side)	Specifies the teachpoint position to which the plate stage rotates so that the east side faces the applicator head. Default setting: 349, approximate To move the plate stage so that each of the other sides face the applicator head, the software uses angles 90- , 180- , and 270- degrees from the teachpoint.
Read angle (east side)	Specifies the teachpoint position to which the plate stage rotates so that the east side faces the optional barcode reader. Default setting: 259, approximate To move the plate stage so that each of the other sides face the barcode reader, the software uses angles 90- , 180- , and 270- degrees from the teachpoint.
Teach	Resets the teachpoint coordinates for the corresponding angle.
Move here	Moves the plate stage to the corresponding teachpoint.

Related information

For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Other tabs in Microplate Labeler Diagnostics	"Quick reference to Diagnostics software" on page 179
Testing the Microplate Labeler functions	"Checking the basic applicator functions" on page 144
How the plate stage and applicator move	"About plate stage and applicator head positions" on page 81

Profiles tab

About this topic

This topic provides a quick reference to the controls and indicators in the Microplate Labeler Diagnostics—Profiles tab. You use the controls in the Profiles tab to create or modify the device communication profiles and to initialize a profile to use while controlling the device from Microplate Labeler Diagnostics.

> **CAUTION**   Each profile can be used by multiple protocols. Deleting, renaming, or changing the parameters for a profile based on one protocol can invalidate other protocols that use the profile.

> **CAUTION**   The plate stage teachpoints are associated with a specific device profile and stored in the Windows registry. If you delete a profile, the teachpoints are also deleted.

Figure   Profiles tab
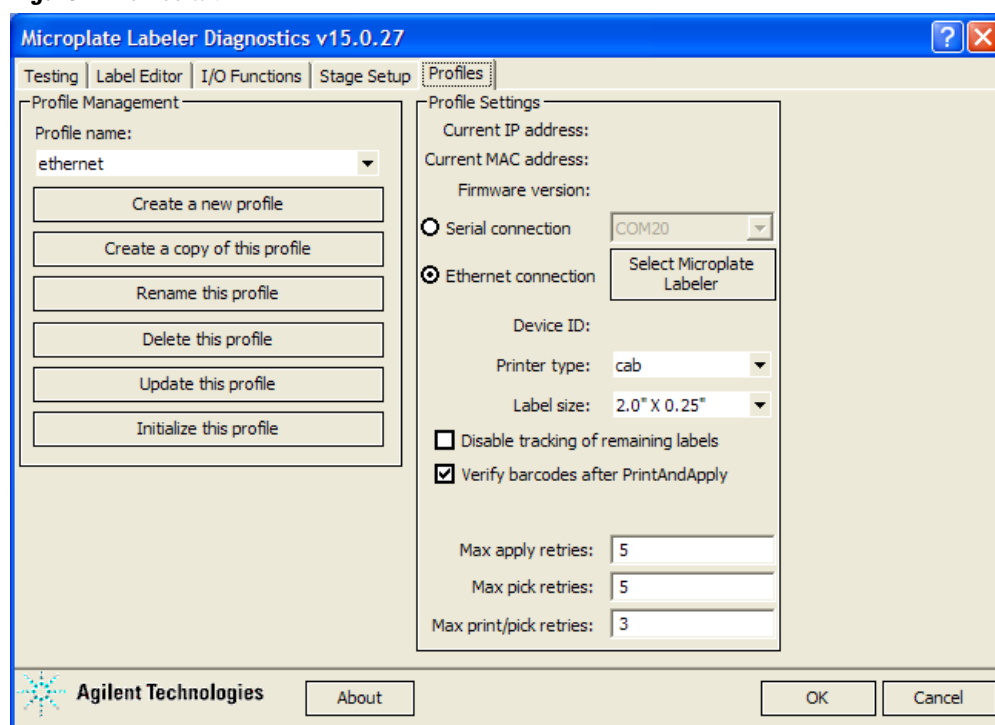
Profiles tab procedures

The Profiles tab enables you to:

Procedure	See...
Create and manage profiles	"Creating and managing profiles" on page 77
Initialize a profile to use in Microplate Labeler Diagnostics	"Initializing a profile" on page 78

Profiles tab contents

The Profiles tab contains the following:
- Profile Management
- Profile Settings

Profile Management area

Controls and indicators	Description
Profile name	Displays the list of available profiles, and allows you to select a profile to manage.
Create a new profile	Opens the Create Profile dialog box so that you can create a new profile.
Create a copy of this profile	Creates a copy of the selected profile. By default the copy is named, *Copy of nnn*.
Rename this profile	Opens the Rename Profile dialog box where you can give a new name to the selected profile.
Delete this profile	Deletes the profile selected in the Profile name list.
Update this profile	Saves changes to the selected profile.
Initialize this profile, Reinitialize this profile, or Close this profile	Initializes or reinitializes the selected profile for controlling the device via Microplate Labeler Diagnostics, or closes the currently initialized profile.

Profile Settings area

Controls and indicators	Description
Current IP address	*Ethernet connection only*. When communication is established with the device using the given profile, displays the current IP address of the device.
Current MAC address	*Ethernet connection only*. When communication is established with the device using the given profile, displays the current MAC address of the device.
Firmware version	When communication is established with the device using the given profile, displays the current firmware version of the device.
Serial connection	*Serial connection only*. Specifies the serial port on the computer for serial communication with the Microplate Labeler. Select the computer COM port for the serial connection from the list.
Ethernet connection	*Ethernet connection only*. Specifies an Ethernet connection for the Microplate Labeler.
Device ID	Displays the device ID for the Microplate Labeler after communication with the device is established.
Select Microplate Labeler	Opens the Discovered Bionet Devices dialog box where you can select the Microplate Labeler that you want to connect to using an Ethernet connection.
Printer type	Specifies the printer model. For the G5404B Microplate Labeler, make sure you select the cab printer.

Controls and indicators	Description
Label size	Specifies the label size.
Disable tracking of remaining labels	Disables the remaining value on the I/O Functions tab.
Verify barcodes after Print and Apply	*Available for optional barcode reader only*. Verifies that every barcode label that is printed and applied can be read by the barcode reader.
Max apply retries	The number of times the device will attempt to apply a label if the applicator head fails to apply the label to a microplate on the plate stage.
Max pick retries	The number of times the device will attempt to pick a label from the printer before giving up on that label and discarding it.
Max print/pick retries	The number of times the device will print a new label and attempt to pick it before displaying an error. For each label that is printed, the device will attempt to pick the printed label based on the Max pick retries value.

Related information

For information about...	See...
Opening Microplate Labeler Diagnostics	"Opening Microplate Labeler Diagnostics" on page 75
Other tabs in Microplate Labeler Diagnostics	"Quick reference to Diagnostics software" on page 179
Connection of the Microplate Labeler	"Connecting the Microplate Labeler to the computer" on page 45
Establishing communications using VWorks software	"VWorks software—establishing communications with the device" on page 65
Establishing communications using BenchWorks	"BenchWorks—establishing communications with the device" on page 70
Establishing communications using PlateTag software	"PlateTag software—establishing communications with the device" on page 73

B

Microplate Labeler ActiveX control

This appendix provides the ActiveX control information for integrating the Microplate Labeler into a third-party lab automation system.

The ActiveX has been verified to work with both Visual Studio 6 and Visual Studio .NET (v 7.1).

This appendix contains the following topics:

Agilent Technologies

About the ActiveX control

What is the Microplate Labeler ActiveX control

The Microplate Labeler ActiveX control is the software component that enables the Microplate Labeler to interact with a third-party lab automation system.

To ensure compatibility with previous releases of the Microplate Labeler (formerly the VCode Barcode Print and Apply Station), the ProgID for the device is VCODE3.VCode3Ctrl.1. The code examples throughout this guide use the term *VCode3* instead of *Microplate Labeler* to maintain consistency with the ProgID.

ActiveX control file

C:\Program Files\Agilent Technologies\Microplate Labeler\MicroplateLabeler.dll

ProgID

VCODE3.VCode3Ctrl.1

How the Microplate Labeler ActiveX control is used

In Agilent Technologies lab automation systems and workstations, the automation control software (VWorks software or BenchWorks software) is already configured to interface with the Microplate Labeler. The operator can control the device using the software.

In a third-party lab automation system, you use the ActiveX controls to enable the third-party software to interface with the Microplate Labeler. Each ActiveX control consists of a collection of the following:

- *Methods*. Functions that can be called to invoke individual operations
- *Properties*. Variables that are used in methods (for example, speed = fast)
- *Events*. Notifications that methods have completed or resulted in errors

When integrating the Microplate Labeler in a lab automation system, you must know the available methods and properties for the ActiveX control.

The following figure illustrates the use of the Microplate Labeler ActiveX control in a lab automation system environment. Actions you perform are conducted through ActiveX methods. System responses are relayed back through ActiveX events.

Figure   Software architecture for the Microplate Labeler
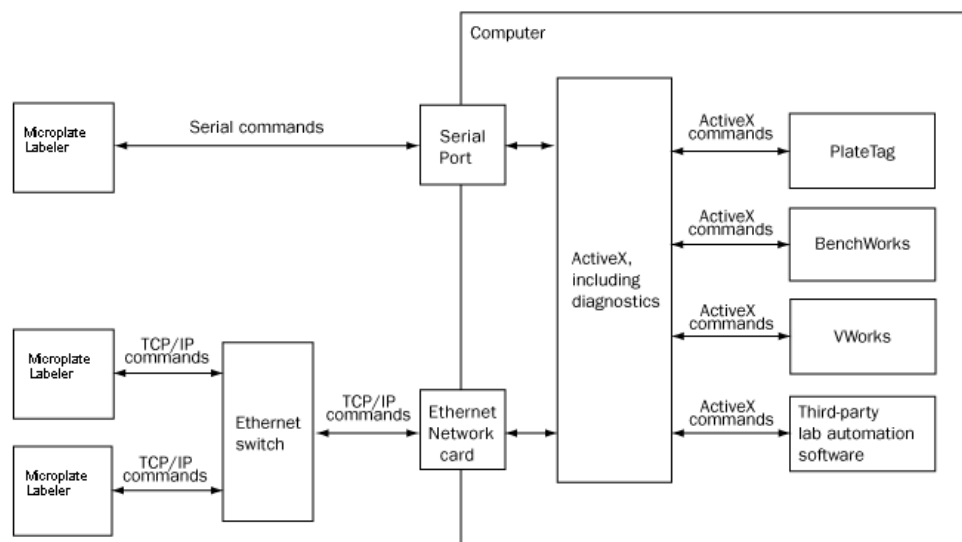
The ActiveX commands are converted into a format that can be carried over serial or Ethernet network cables and sent to the Microplate Labeler firmware.

Related topics

For information about...	See...
Microplate Labeler ActiveX methods	"Methods" on page 210
Microplate Labeler ActiveX properties	"Properties" on page 208
Microplate Labeler ActiveX events	"Events" on page 223
Reporting problems	"Reporting problems" on page 176

Properties

ControlPicture

Description

Retrieves a picture of the Microplate Labeler bitmap that can be used in the container's application.

Examples

Visual C++

```
/* The CPicture class will be imported into your project
when the ActiveX is installed */
CButton button;
//Create a button.
CPicture VCodePic;
//Retrieve the picture.
VCodePic = m_VCode.GetControlPicture();
/* Paint the bitmap onto the button.*/
button.SetBitmap( (HBITMAP) VCodePic.GetHandle());
```

Visual Basic

```
'Assume there is a button named Command1 on the
'current form. You must set the Style property of
'Command1 to "Graphical".
Command1.Picture = VCode1.ControlPicture
```

Blocking

Description

Forces ActiveX methods to block, or wait until the method is complete before returning control to the application. If set to FALSE, the method returns immediately, and the user should handle the events accordingly.

Examples

Visual C++

```
// Set the VCode in blocking mode.
m_VCode.SetBlocking( TRUE);
// Set the VCode in non-blocking mode.
m_VCode.SetBlocking( FALSE);
// User should handle events if non-blocking!
```

```
'set VCode in blocking mode.
VCode1.Blocking = True
'set VCode in non-blocking mode.
VCode1.Blocking = False
'user should handle events if non-blocking.
```

NumReprint Attempts

Description

If a barcode reader is attached to the Microplate Labeler, setting this value to a non-zero integer enables barcode verification after printing and applying labels.

If the barcodes cannot be read, the Microplate Labeler will reprint and apply up to NumReprintAttempts times before giving an error.

Examples

Visual C++

```
m_VCode.SetNumReprintAttempts(5);
```

Visual Basic

```
VCode1.NumReprintAttempts=5
```

Related topics

For information about...	See...
Microplate Labeler ActiveX methods	"Methods" on page 210
Microplate Labeler ActiveX events	"Events" on page 223
Overview of the ActiveX controls	"About the ActiveX control" on page 206
Reporting problems	"Reporting problems" on page 176

Methods

Abort, Retry, and Ignore

Note: These are three separate methods.

Description

Aborts, retries, or ignores the process if an error is caught in the error event handler.

Parameters

None.

Returns

HRESULT

Examples

This example refers to abort, retry and ignore.

Visual C++

```
// This code should appear in the OnError event handler
int response = MessageBox("An error occurred", "Error",
MB_ABORTRETRYIGNORE);
switch( response) {
case IDABORT:
m_VCode.Abort();
break;
case IDRETRY:
m_VCode.Retry();
break;
case IDIGNORE:
m_VCode.Ignore();
break;
}
```

```
Dim response As Integer
response = MsgBox("An error occurred", vbAbortRetryIgnore)
Select Case response
Case vbAbort
VCode1.Abort
Case vbIgnore
VCode1.Ignore
Case vbRetry
VCode1.Retry
End Select
```

AboutBox

Displays the About Box message box, which includes the ActiveX version and firmware version of the currently connected Microplate Labeler if initialized.

AddToQueue

Description

If multiple label formats and data need to be printed on each side of the plate, use AddToQueue. ClearQueue must be called after the print-and-apply cycle to prevent excess labels from being applied to the plate.

Parameters

Name	Type	Range	Description
format	SHORT	1–20	Whic label format to use
side	BYTE	1, 2, 4, or 8	1 = east side 2 = north side 4 = west side 8 = south side The side is a bitmask, so if you want to print on the north and south sides, the parameter is 10 (2+8).
dropStage	BOOL	TRUE / FALSE	TRUE = drop stage before applying label FALSE = raise stage before applying label
field0	BSTR	Not applicable	Data for field 1
field1	BSTR	Not applicable	Data for field 2

Name	Type	Range	Description
field2	BSTR	Not applicable	Data for field 3
field3	BSTR	Not applicable	Data for field 4
field4	BSTR	Not applicable	Data for field 5
field5	BSTR	Not applicable	Data for field 6

Return

HRESULT

Examples

Visual C++

```
/* Add a label using format 1, east side (not used by
PrintLabelQueue), drop the stage before printing, and print
"hi" in field 1, and "there" in field 2.*/
m_VCode.AddToQueue( 1, 1, TRUE, "hi", "there", "", "", "",
"");
```

Visual Basic

```
'Add a label using format 1, east side (not used by
'PrintLabelQueue), drop the stage before printing, and
'print "hi" in 'field 1, and "there" in field 2.
VCode1.AddToQueue 1, 1, True, "hi", "there", "", "", "", ""
```

ClearQueue

Description

Clears the label queue. Should be called after each call to
PrintAndApplyQueue.

Parameters

None.

Returns

HRESULT

Examples

Visual C++	Visual Basic
m_VCode.ClearQueue();	VCode1.ClearQueue

Close

Description

Closes the Microplate Labeler ActiveX.

Parameters

None.

Returns

HRESULT

Examples

Visual C++	Visual Basic
`m_VCode.Close();`	`VCode1.Close`

DropStage

Description

Drops the plate stage.

Parameters

Name	Type	Range	Description
Name	BOOL	Any number	0 = do not drop Any other = drop

Examples

Visual C++	Visual Basic
`m_VCode.DropStage(1);` `//Drops the stage.`	`VCode1.DropStage(0);` `'Raises the stage.`

EnumerateAllFormats

Description

Returns the list of label formats and the list of fields for each format.

Parameters

Name	Type	Range	Description
strFormats	BSTR*	Not applicable	Returns the list of formats.

Returns

HRESULT

EmunerateProfiles

Description

Returns all defined profiles on the computer.

Parameters

None.

Returns

VARIANT

Examples

Visual C++

```
VARIANT profiles=m_VCode.EnumerateProfile();
```

Visual Basic

```
Dim profiles() as String
profiles=VCode1.EnumerateProfiles
```

GetBarcodeField

Description

Allows the user to retrieve the first barcode field index in a label format. Ideal for verifying the printed barcode.

Parameters

Name	Type	Range	Description
format	SHORT	1–20	Specifies the label format to check.
field	SHORT*	Not applicable	Stores the barcode field index after returning from the call.

Returns

HRESULT

Examples

Visual C++

```
SHORT field;
m_VCode.GetBarcodeField( 1, &field);
//Field now contains the
//barcode field index,0-based.
```

Visual Basic

```
Dim field as Integer
VCode1.GetBarcodeField( 1, field)
```

GetLastError

Description

Returns the last known error condition.

Parameters

Name	Type	Range	Description
error	BSTR*	Not applicable	Stores the error string after returning from the call.

Returns

HRESULT

Examples

Visual C++

```
BSTR msg;
m_VCode.GetLastError( &msg);
// msg now contains the error message
SysFreeString( msg);
```

Visual Basic

```
Dim msg as String
VCode1.GetLastError( msg)
```

HasBCR

Description

Returns whether or not the Microplate Labeler has detected a barcode reader.

Parameters

None.

Returns

VARIANT_BOOL

Examples

Visual C++

```
VARIANT_BOOL hasBCR= m_VCode.HasBCR();
```

Visual Basic

```
Dim hasbcr as Boolean
hasbcr=VCode1.HasBCR()
```

HomeStage

Description

Homes the Microplate Labeler stage, and starts the event HomeComplete when the motor has finished homing.

Parameters

None.

Returns

HRESULT

Examples

Visual C++	Visual Basic
`m_VCode.HomeStage();`	`VCode1.HomeStage`

Initialize

Description

Initializes the ActiveX and sets the Microplate Labeler to communicate using the parameters set in the profile. The profile specifies whether the Microplate Labeler should use the serial or Ethernet port.

The profiles "serial" and "ethernet" are automatically generated. The parameters for each can be adjusted in the Profiles tab of Microplate Labeler Diagnostics (using a call to ShowDiagsDialog).

Initialize homes the Microplate Labeler and searches for an attached bar code reader. It also starts the InitializeComplete event when the Microplate Labeler has initialized.

Parameters

Name	Type
profileName	BSTR

Returns

HRESULT

Examples

Visual C++

```
// connect via serial using the com port specified in
// the profile.
m_VCode.Initialize( "serial");
```

```
'connect via Ethernet, using the BioNET ID
'specified in the profile.
VCode1.Initialize "ethernet"
```

PrintAndApply

Description

Prints and applies one set of label data to one side of the plate, executing immediately. The label format is specified by number instead of format name.

Parameters

Name	Type	Range	Description
format	SHORT	1 – 20	Label format to use
sides	BYTE	1 - 15	1 = east side 2 = north side 4 = west side 8 = south side The side is a bitmask, so if you want to print on the north and south sides, the parameter is 10 (2+8).
dropStage	BOOL	TRUE / FALSE	TRUE = drop stage before applying label FALSE = raise stage before applying label
field0	BSTR	Not applicable	Data for field 1
field1	BSTR	Not applicable	Data for field 2
field2	BSTR	Not applicable	Data for field 3
field3	BSTR	Not applicable	Data for field 4
field4	BSTR	Not applicable	Data for field 5
field5	BSTR	Not applicable	Data for field 6

Returns

HRESULT

Examples

Visual C++

```
/* Print and apply "hi" and "there" using format 2 on the
west and south sides. According to the table, west = 4 and
south = 8, so pass 12 in the for the sides parameter.*/
m_VCode.PrintAndApply( 2, 12, TRUE, "hi", "there", "", "",
"", "");
```

Visual Basic

```
'Print and apply "hi" and "there" using format 2
'on the west and south sides.
'According to the table, west = 4 and south = 8,
'so pass 12 in the for the sides parameter.
VCode1.PrintAndApply 2, 12, True, "hi", "there", "", "",
"", ""
```

printAndApply_new

Description

Prints and applies one set of label data to one side of the plate, executing immediately. The label format is specified by format name instead of format number.

Parameters

Name	Type	Range	Description
format	LPCTSTR	Not applicable	Label format to use
sides	BYTE	1 - 15	1 = east side 2 = north side 4 = west side 8 = south side The side is a bitmask, so if you want to print on the north and south sides, the parameter is 10 (2+8).
dropStage	BOOL	TRUE / FALSE	TRUE = drop stage before applying label FALSE = raise stage before applying label
field0	LPCTSTR	Not applicable	Data for field 1
field1	LPCTSTR	Not applicable	Data for field 2
field2	LPCTSTR	Not applicable	Data for field 3
field3	LPCTSTR	Not applicable	Data for field 4

Name	Type	Range	Description
field4	LPCTSTR	Not applicable	Data for field 5
field5	LPCTSTR	Not applicable	Data for field 6

Returns

HRESULT

Returns fail if format name is not found.

PrintAndApplyQueue

Description

Prints and applies all of the labels added to the label queue using the AddToQueue method.

Parameters

None.

Returns

HRESULT

Examples

Visual C++	Visual Basic
`m_VCode.PrintAndApplyQueue();`	`VCode1.PrintAndApplyQueue`

PrintLabel

Description

Prints a label with the specified parameters, where the format is specified by number instead of name.

Parameters

Name	Type	Range	Description
format	SHORT	1–20	Label format to use
field0	BSTR	Not applicable	Data for field 1
field1	BSTR	Not applicable	Data for field 2
field2	BSTR	Not applicable	Data for field 3
field3	BSTR	Not applicable	Data for field 4
field4	BSTR	Not applicable	Data for field 5
field5	BSTR	Not applicable	Data for field 6

Returns

HRESULT

Examples

Visual C++	Visual Basic
`m_VCode.PrintLabel();`	`VCode1.PrintLabel`

Print_new

Description

Prints a label with the specified parameters, where the format is specified by name instead of number.

Parameters

Name	Type	Range	Description
format	LPCTSTR	Not applicable	Label format to use
field0	LPCTSTR	Not applicable	Data for field 1
field1	LPCTSTR	Not applicable	Data for field 2
field2	LPCTSTR	Not applicable	Data for field 3
field3	LPCTSTR	Not applicable	Data for field 4
field4	LPCTSTR	Not applicable	Data for field 5
field5	LPCTSTR	Not applicable	Data for field 6

Returns

HRESULT

Examples

Visual C++	Visual Basic
`m_VCode.Print_new();`	`VCode1.Print_new`

PrintLabelQueue

Description

Prints all of the labels added to the label queue using the AddToQueue method.

Parameters

None.

Returns

HRESULT

Examples

Visual C++	Visual Basic
`m_VCode.PrintLabelQueue();`	`VCode1.PrintLabelQueue`

ReadBarcode

Description

Reads a barcode on the specified side of the plate.

Parameters

Name	Type	Range	Description
side	SHORT	0, 1, 2, 4, 8	0 = reads barcode at current stage position 1 = reads east side barcode 2 = reads north side barcode 4 = reads west side barcode 8 = reads south side barcode
barcode	BSTR*		The barcode read by the reader is returned through this outparam. If no barcode reader was detected upon initialization, this method returns E_FAIL. If the reader failed to read a valid barcode, this method returns S_FALSE.

Returns

HRESULT

Examples

Visual C++

```
BSTR bc;
// Read the barcode at the current stage position.
m_VCode.ReadBarcode( 0, &bc);
SysFreeString( bc);
// Read the barcode on the north side of the plate.
m_VCode.ReadBarcode( 2, &bc);
SysFreeString( bc);
```

Visual Basic
| ```
Dim bc as String
VCode1.ReadBarcode( 2, bc)
``` |

Rotate180

Description

If a plate enters the automated system in the wrong orientation, Rotate180 will rotate the plate by 180 degrees.

Parameters

None.

Returns

HRESULT

Examples

Visual C++	Visual Basic
`m_VCode.Rotate180();`	`VCode1.Rotate180`

ShowDiagsDialog

Description

Displays Microplate Labeler Diagnostics.

Parameters

Name	Type	Range	Description
modal	BOOL	TRUE / FALSE	Displays Microplate Labeler Diagnostics modally (TRUE) or non-modally (FALSE).
securityLevel	BYTE	N/A	For future use. Currently not implemented.

Returns

HRESULT

Examples

Visual C++
`m_VCode.ShowDiagsDialog( true, 0)`

Related topics

Events

Error

Description

This event starts when an error occurs during any print-and-apply operation or initialization.

Parameters

Name	Type	Description
Number	Number	Not used.
Description	BSTR*	Description of the error.
Scode	LONG	Not used.
HelpFile	BSTR	Not used.
HelpContext	LONG	Not used.
CancelDisplay	VARIANT_BOOL*	Set to TRUE to disable the stock event handler behavior, which is to display a dialog box with the description in it.

Returns

None.

GreenButton

Description

This event starts when the green button is pressed.

Parameters

None.

Returns

None.

HomeComplete

Description

This event starts when the motor homes successfully.

Parameters

None.

Returns

None.

InitializeComplete

Description

This event starts after the Microplate Labeler initializes completely. This is necessary since units without a barcode reader take longer to initialize.

Parameters

None.

Returns

None.

PrintAndApplyComplete

Description

This event starts when the print-and-apply operation completes successfully.

Parameters

None.

Returns

None.

PrintComplete

Description

This event starts when a label is printed successfully using PrintLabel or PrintQueue (after the entire queue is printed).

Parameters

None.

Returns

None.

Rotate180Complete

Description

This event starts once the Microplate Labeler has finished rotating the stage by 180 degrees.

Parameters

None.

Returns

None.

Related topics

For information about...	See...
Microplate Labeler ActiveX methods	"Methods" on page 210
Microplate Labeler ActiveX properties	"Properties" on page 208
Overview of the ActiveX controls	"About the ActiveX control" on page 206
Reporting problems	"Reporting problems" on page 176

Glossary

cassette The column of shelves or slots in a Labware MiniHub or the Plate Hub Carousel.

clamps (BenchCel) The components inside of the stacker head that close and open the stacker grippers during the loading, unloading, downstacking, and upstacking processes.

controlling computer The lab automation system computer that controls the devices in the system.

cycle See seal cycle.

deadlock An error that occurs when the number of locations available in the system is less than the number of microplates in the system. Because the microplates cannot move to the expected locations, the protocol pauses.

device An item on your lab automation system that can have an entry in the device file. A device can be a robot, an instrument, or a location on the lab automation system that can hold a piece of labware.

device file A file that contains the configuration information for a device. The device file has the .dev file name extension and is stored in the folder that you specify when saving the file.

downstack The process in which a microplate is moved out of the stack.

error handler The set of conditions that define a specific recovery response to an error.

home position The position where all robot axes are at the 0 position (the robot head is approximately at the center of the x-axis and at 0 of the z-axis, and the robot arms are perpendicular to the x-axis).

homing The process in which the robot is sent to the factory-defined home position for each axis of motion.

hot plate (PlateLoc) A heated metal plate inside the sealing chamber that descends and presses the seal onto the plate.

insert A pad placed under the plate to support the bottom of the wells for uniform sealing.

location group A list of labware that can be moved into or out of particular slots in a storage device.

plate group A list of specific labware that can be moved into or out of a storage device without regard for the slot locations.

plate instance A single labware in a labware group that is represented by the process plate icon.

plate stage The removable metal platform on which you load a plate.

plate-stage support (Centrifuge) The structure on which you load a plate stage. The plate-stage support extends when the door opens.

profile The Microsoft Windows registry entry that contains the communication settings required for communication between a device and the VWorks software.

process A sequence of tasks that are performed on a particular labware or a group of labware.

protocol A schedule of tasks to be performed by a standalone device, or devices in the lab automation system.

regrip station A location that enables the robot to change its grip orientation (landscape or portrait), or adjust its grip at the specified gripping height. Grip height adjustment might be necessary after a robot picks up a labware higher than the specified gripping height because of physical restrictions at a teachpoint.

robot grippers The components that the robot uses to hold labware.

run A process in which one or more microplates are processed. In a standalone device, the run consists of one cycle. In a lab automation system, a run can consist of multiple cycles that are automated.

safe zone The boundary within which the robot is allowed to move without colliding with external devices.

seal cycle The process in which a single plate is sealed on the PlateLoc Sealer.

seal entry slot The narrow entry on the back of the PlateLoc Sealer where the seal is inserted into the device.

seal-loading card A rectangular card that is used to facilitate the seal loading process on the PlateLoc Sealer.

seal-roll support The triangular structures at the top of the PlateLoc Sealer where a roll of seal is mounted.

sealing chamber The area inside of the PlateLoc Sealer where the seal is applied to a plate.

shelves (BenchCel) The components inside of the stacker head that provide leveling surfaces for the microplates, thus ensuring accurate robot gripping, during the downstacking process.

stacker grippers The padding at the bottom of the stacker racks that hold microplates when a microplate is loaded, downstacked, or upstacked.

subprocess A sequence of tasks performed as a subroutine within a protocol. Typically the subprocess is performed by a single device type, such as the Bravo device.

task An operation performed on one or more labware.

task parameters The parameters associated with each task in a protocol. For example, in a labeling task, the parameters include the label value.

teachpoint A set of coordinates that define where the robot can pick up or place labware and the location of a known object.

teachpoint file The XML file that contains the settings for one or more device teachpoints.

touch screen The interface on the front of the PlateLoc Sealer where sealing parameters are set, the seal cycle can be started or stopped, and the seal cycle can be monitored.

upstack The process in which a microplate is moved back into the stack.

waypoint A set of coordinates that define a location the robot passes through on its way to a teachpoint.

workspace The boundary within which the robot can move without limitations.

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Agilent Technologies

User Guide

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